THE RUBBER AGE

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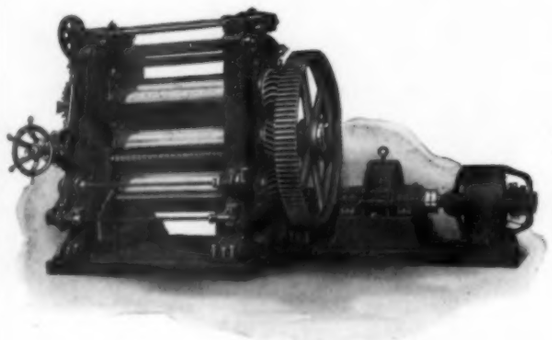

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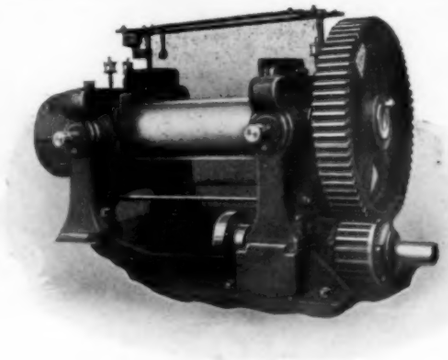

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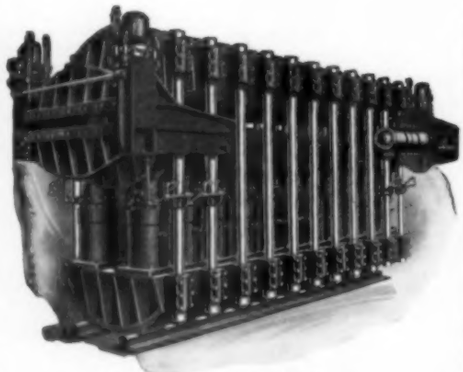

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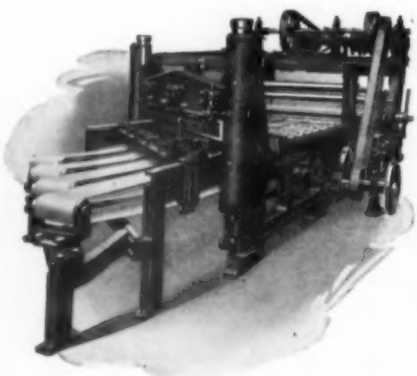

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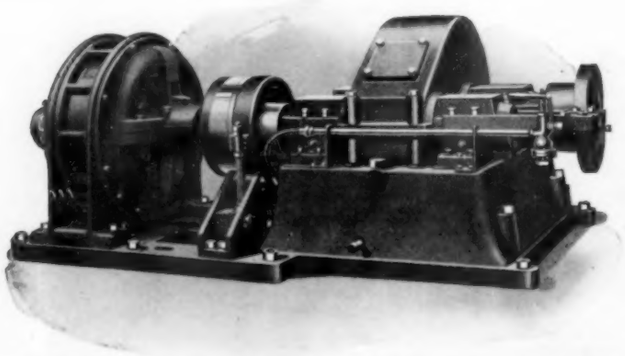

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VOL. IX JUNE 10, 1921 No. 7

Methods of Making Friction Tests

By Earl S. Teed

Formerly with the Technical Department, The B. F. Goodrich Company, Akron, Ohio

The testing of the friction pull as applied to rubber belts is of primary importance. Common practice makes it logical to divide this into three phases. These are when the friction test is made on a sample cut longitudinally from the belt and no attempt is made to control the angle of separation; when the angle of separation is kept nearly constant and when the sample is taken transversely from the belt.

After disposing of the three phases as applied to belts consideration can be given to the testing of various grades of rubber hose.

This article will be confined to the testing of friction pull of rubber belts when no attempt is made to control the angle of separation during the process of the test.

The Importance of Friction Pull in Rubber Belting

Rubber belting as hereafter considered in this article will mean the common flat belt which is used for the transmission of power or conveyor purposes. Such belting is made up of layers of plies of cotton fabric which has been impregnated or frictioned with a rubber compound. The purpose of the fabric is to give strength, body and the proper amount of elasticity, while the rubber compound is used as a material to hold together the plies of fabric and to act as a protective cushion to all parts. When a belt is in use it is constantly being flexed or bent back and forth. This subjects the cotton fibers to a constant sawing action. A great number of these fibers twisted together make a thread which is in turn subjected to the same sawing action to a longer degree. And so the sawing action continues through each unit which goes to make up the fabric so that the plies of fabric in turn are subjected to a sawing action which is much greater than any of the preceding.

An Ideal Material for Protection

Since rubber in the uncured state softens and flows readily under the action of heat and pressure and then by further heat treatment is vulcanized or cured so that it has wonderful elasticity and strength, it makes an ideal material for the protection and holding together of the plies of fabric which go to make up the belt. The ideal condition would be to have every individual fiber of cotton coated with just enough of the rubber compound so that the elasticity of the rubber would take care of the give and take between the fibers. If this scheme or relation of rubber compound to fabric were carried out through the entire construction of the belt the result would be a perfect belt so far as the proper relation of rubber and cotton fabric is concerned. The difference in quality of two belts then would be determined by the quality of the fabric and of the rubber compound that was used.

The quality of the rubber compound and the extent to which the ideal relation has been brought about is judged by the force required to separate adjacent layers of fabric in the finished belt. This force is usually spoken of as the friction pull, or sometimes just the friction of the belt. It means the force in pounds required to separate two strips or plies of the fabric one inch wide. It is not to be understood that the friction pull tells the whole story as to what the belts will actually do in service but it is of importance and it is the means commonly used by the consumer to judge the quality of the rubber belt which he buys. He believes, and as a general thing it is true, that the greater the number of pounds required to separate the plies the higher the quality of the rubber used, and that the higher the quality the longer the rubber will absorb the stresses and strains which naturally occur in the belt during its operation.

Things to Be Considered in Preparing the Samples for Test

In the preparation of samples for friction pull it is necessary to have determined whether the test will be made longitudinally or transversely of the belt, and also whether the angle of separation will be kept practically constant or allowed to vary as the test progresses. Each of these points will influence the final results to be interpreted as friction pull.

Methods of Making Tests

At the present time there are three common methods which may be classified as : dead weight; machine with a speed of one inch per minute, and a machine with a speed of twenty inches per minute;

The "Dead Weight" method is the oldest and probably the most extensively used because of the simplicity of equipment needed. All that is required to make this test is a means of fastening one end of the sample to a fairly rigid support and known weights to hang on the ply which is to be stripped off. Thus it is possible for the person who buys a very small quantity of belting to easily obtain the equipment and to determine whether he has actually obtained a belt which has the friction pull that he desires. Undoubtedly every manufacturer of rubber belting is equipped to test the friction pull by the "dead weight" method and uses this method to a greater or lesser degree depending upon what other equipment he has and whether his customer will use the "dead weight" method in checking up his product.

The common machine for making the test with a separation at the rate of one inch per minute is known as the "Cooey". It is an autographic machine that makes a curve on prepared paper which shows the inches separation horizontally and the pounds pull vertically. The scale is such that actual readings can be made in pounds and inches. This machine is extensively used by the large producers and consumers.

The machine for making the test with a separation at the rate of twenty inches per minute may be any regular rubber testing machine which has a jaw separation of twenty inches per minute. Two very common types are the Navy testing machine and the Scott testing machine.

The Navy testing machine is of the pendulum type. The pendulum swings out along the arc of a circle. This arc is graduated so that the friction pull can be read in pounds.

CHART I

Edge—>	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 7	Section 8	Section 9	Section 10
	C1-1 N1-2	N2-1 S2-2	S3-1 DW3-2	DW4-1 C4-2	C5-1 N5-2	N6-1 S6-2	S7-7 DW7-2	DW8-1 C8-2	C9-1 N9-2	N10-1 S10-2
	S1-3 DW1-4	DW2-3 C2-4	C3-3 N3-4	Seam in Belt N4-3 S4-4	S5-3 DW5-4	DW6-3 C6-4	C7-3 N7-4	(Prob. No. 3-F) N8-8 S8-4	S9-3 DW9-4	DW10-3 C10-4
	Trim off both edges									

TABLE NO. I-a—Results Obtained by the Dead Weight Method

Identification	lbs. 1st Ply	Time in Seconds 1st in.	2nd in.	3rd in.	Time Ave. in Sec.	lbs. 2nd Ply	Time in Seconds 1st in.	2nd in.	3rd in.	Ave. Time in Sec.	lbs. 3rd Ply	Time in Seconds 1st in.	2nd in.	3rd in.	Ave. Time in Sec.	lbs. 4th Ply	Time in Seconds 1st in.	2nd in.	3rd in.	Ave. Time in Sec.
DW1-4 ..	23	68	75	80	74	24	60	45	80	60	22	48	65	70	61	25	75	75	50	65
DW2-3 ..	23	78	70	75	74	24	50	60	45	52	22	33	45	30	36	22	65	60	77	67
DW3-2 ..	30	70	90	85	82	23	35	50	60	48	23	50	30	55	45	28	70	215	65	90
DW4-1 ..	23	73	95	93	87	25	50	40	50	47	22	60	45	50	52	23	55	60	85	67
DW5-4 ..	23	75	63	80	73	24	50	60	75	63	22	50	45	40	45	22	70	210	85	95
DW6-3 ..	25	17	24	19	20	25	98	100	120	106	20	38	45	22	35	25	75	155	55	95
DW7-2 ..	25	35	40	37	37	23	95	200	80	125	23	40	40	167	82	25	87	15	40	47
DW8-1 ..	24	50	40	68	53	24	45	90	110	82	22	50	70	124	82	22	90	180	235	168
DW9-4 ..	23	75	80	110	88	24	90	120	120	110	24	15	15	15	15	25	80	100	85	88
DW10-3 .	30	45	40	10	32	21	85	180	133	133	22	40	70	75	62	24	58	54	75	63
Average ..	24.9				62	23.7				82.8	22.2				51.5	24.1				84.5

The Scott testing machine is of the dial type and also autographic. The number of pounds used to throw the lever arm out or in other words the resistance being offered to the jaw separation is shown on the dial. In addition to the dial the autographic machine is provided with an attachment which will take ordinary plotting paper and make a curve showing the number of pounds pull.

Phases under Consideration in this Article

The purpose of the following will be to show the relative merits of testing by the dead weight method, the machine method with a separation of one inch per minute, and the machine method with a separation of twenty inches per minute when the sample is taken longitudinally, and the angle of separation is allowed to vary at will as the test progresses.

Obtaining Samples and Marking for Identification

A section of belting long enough so that all samples were obtained from the same piece was taken from regular stock. This belt was five ply, eight inches wide and of fabric weighing approximately thirty-one ounces per square yard, and was intended for a regular twenty pound friction specification belting.

It was marked off according to the Chart No. I shown above.

Explanation of Chart No. I

Each section represents 6 inches in length on the belt. There are ten sections which provides for ten samples for each method. The letter *C* in the first space in section 1 means the sample for the Cooey machine. Likewise the *N* in the second space, section 1 means sample for the Navy machine and so on down in section 1, *S* means sample for the Scott machine and *DW* means sample for the Dead Weight method of test. The number immediately following the letter represents the section. This is separated by a dash followed by a number which represents the exact position in the section. The complete marking is interpreted thus C1-1, sample for Cooey machine, section 1, position 1.

Preparation of the Sample

The samples were cut from the belt according to the marking shown in table No. 1. The plies were separated for slightly over two inches at one end to give a chance to insert them in the jaws of the test machine. Below the separation three one-inch marks were put on the edge of the belt.

Method of Obtaining Readings

The same method as far as possible was used to obtain the readings on each machine. The observer took three readings over each inch of separation and took the average of these which is recorded for the friction pull for that inch. The average obtained for the three inches is given as the friction pull for that ply.

By the Dead Weight method the weight required to cause a separation of one inch per minute was found as nearly as possible. This weight was then allowed to cause the belt to separate for three successive inches. The time required for each inch of separation was recorded in seconds. The average of the three was recorded as the rate of separation of that ply. The final result is expressed in pounds and time of separation because it is practically impossible to obtain a rate of separation of exactly one inch per minute by the dead weight method.

TABLE NO. I-b—Percentage Variations from the Average

Identification	1st Ply Ave. in lbs. 24.9	1st Ply Ave. Time in sec. 62	2nd Ply Ave. in lbs. 23.7	2nd Ply Ave. Time in sec. 82.8	3rd Ply Ave. in lbs. 22.2	3rd Ply Ave. Time in sec. 51.5	4th Ply Ave. in lbs. 24.1	4th Ply Ave. Time in sec 75.4
DW1-4	- 7.63	19.35	1.27	-25.12	- .91	18.45	3.74	-23.09
DW2-3	- 7.63	19.35	1.27	42.09	- .91	-30.10	- 8.72	-20.72
DW3-2	20.49	32.25	- 2.95	-37.2	3.60	-12.65	16.17	6.52
DW4-1	- 7.63	40.32	5.49	-43.22	- .91	9.71	- 4.56	-20.72
DW5-4	- 7.63	17.75	1.27	-23.82	- .91	-12.65	- 8.72	12.43
DW6-3	.4	-67.78	5.49	29.22	-9.91	-32.04	3.74	12.43
DW7-2	.4	-40.32	2.95	52.19	3.60	59.21	3.74	-44.4
DW8-1	- 3.61	-14.51	1.27	- .97	- .91	59.21	- 8.72	98.79
DW9-4	- 7.61	41.94	1.27	34.09	8.10	-70.85	3.74	4.14
DW10-3	20.49	-48.40	-11.39	61.81	- .91	20.39	- .42	-25.47

TABLE NO. I-c

	1st Ply lbs.	1st Ply Sec.	2nd Ply lbs.	2nd Ply Sec.	3rd Ply lbs.	3rd Ply Sec.	4th Ply lbs.	4th Ply Sec
Maximum Per Cent Variation	20.49	-67.78	-11.39	-61.81	-9.91	-70.85	-16.17	-98.79
Minimum Per Cent Variation	.4	-17.75	1.27	- .97	- .91	- 9.71	- .42	- 4.14
Per Cent Under 5 Per Cent Variation	30	0	70	10	80	0	60	10

TABLE NO. II-a—Results Obtained with Cooey Machine

Identification	1st Ply in lbs.	2nd Ply in lbs.	3rd Ply in lbs.	4th Ply in lbs.
C1-1	24	23	22	22
C2-4	24	23	22	23
C3-3	25	24	21	21
C4-2	24	23	21	22
C5-1	25	25	22	22
C6-4	24	25	21	23
C7-3	24	21	20	22
C8-2	23	23	23	23
C9-1	25	25	22	23
C10-4	24	25	21	22
Average	24.3	23.7	21.5	22.3

TABLE NO. II-b—Percentage Variations from the Average

Identification	1st Ply Ave. lbs. 24.3	2nd Ply Ave. lbs. 23.7	3rd Ply Ave. lbs. 21.5	4th Ply Ave. lbs, 22.3
C1-1	.82	- 2.95	2.33	-1.35
C2-4	-1.24	- 2.95	2.33	3.14
C3-3	2.88	1.24	-2.33	-5.83
C4-2	-1.24	- 2.95	-2.33	-1.35
C5-1	2.88	5.48	2.33	-1.35
C6-4	-1.24	5.48	2.33	3.14
C7-3	-1.24	-11.39	-2.33	-1.35
C8-2	-5.55	- 2.95	-6.98	3.14
C9-1	2.88	5.48	2.33	3.14
C10-4	-1.24	5.48	-2.33	-1.35

TABLE NO. II-c

	1st Ply	2nd Ply	3rd Ply	4th Ply
Maximum Per Cent Variation	5.35	11.39	6.98	5.83
Minimum Per Cent Variation	.82	1.24	2.33	1.35
Per Cent Under 5 Per Cent Variation	90	50	80	90

In the case of the Cooey machine the results were taken from the curve and tabulated.

Observed results and curve results were both obtained with the Scott machine.

Method of Making Tests

The sample 6 inches long and one inch wide and separated at one end according to the previously described method of preparation, was put with the four plies in the stationary jaw of the machine. The other ply or the first ply to be stripped off was fastened on the movable jaw of the machine. In case of the Dead Weight methol this was the ply on which the weights were hung. After the first ply had been tested the second ply took its place and was tested in a similar manner. This process was continued straight through the belt until all plies had been tested. As each ply was stripped off the angle of separation changed. By the angle of separation is meant the angle which the separating ply makes with the free end of the test sample. This, of course, is influenced by the stiffness of the sample, the amount of pull required to cause the separation and many other things which would lead into too complex a mathematical and physical problem to be considered at this time.

It will be observed from the averages in Table I that the first ply has the highest friction pull and that there is a gradual falling off until the last two plies are tested. It would be natural to expect that this gradual falling off would continue straight through the belt and as a matter of fact that is exactly what does happen but unfortunately this particular belt had a light coat of rubber between these last two plies. This light coat raises the friction pull by about two pounds, therefore if all through this series of tests two pounds are deducted from this last value it will leave very nearly the true value.

In order to show the variation on each individual test the entire thing has been transposed to a percentage basis as shown in Table II. Values below the averages are marked with a minus sign while those above have no sign at all.

(Continued on page 254)

TABLE NO. III-a—Results Obtained with Navy Machine

Identification	Pounds Pull 1st in.	2nd in.	3rd in.	Ave. 1st Ply	Pounds Pull 1st in.	2nd in.	3rd in.	Ave. 2nd Ply	Pounds Pull 1st in.	2nd in.	3rd in.	Ave. 3rd Ply	Pounds Pull 1st in.	2nd in.	3rd in.	Ave. 4th Ply
N1-2	28	27	27	27.3	26.5	25.5	25.5	26	23	26.2	24.8	24.7	25	25.7	23.4	24.7
N2-1	27.7	28.2	27.3	27.7	26.2	25.2	25.2	25.5	24	25	25.2	24.7	21	24	24	23
N3-4	26	26.2	25.7	25.9	26	26	22.2	24.7	23.7	25	24	24.2	28.2	27.5	26.2	27.3
N4-3	26.5	26.5	25.5	26.2	27	26.2	26.5	26.6	23.2	23	24.2	23.5	28.2	28	27	27.7
N5-2	26	27	27	26.7	25	27	26	26	25	25	24	24.7	26	25	26	25.5
N6-1	25	25.5	26.5	25.6	26	23	25	24.7	23.5	22	23.5	23	26	26.5	27	26.5
N7-4	26.5	27	26.5	26.7	26	25	27	26	24	23.5	24.5	24	26	26	26.5	26.2
N8-3	27	26.5	26	27	25	26	24	25	23	22	23	22.7	29	25	27	27
N9-2	25	25.5	26	25.5	27	26	27.5	26.8	24	24.5	24	24.2	25	24.5	25	25
N10-1	25	25.5	25.5	25.3	26	25.5	25	25.5	25.5	26	26	25.8	25.5	26.5	25	25.6
Average				26.4				25.7				24.2				25.9

TABLE NO. III-b—Percentage Variations from the Average

Identification	1st Ply Ave. lbs. 26.4	2nd Ply Ave. lbs. 25.7	3rd Ply Ave. lbs. 24.2	4th Ply Ave. lbs, 25.3
N1-2	3.41	1.17	1.24	- 4.63
N2-1	4.92	- .78	1.24	-11.20
N3-4	-2.65	-3.50	0	5.41
N4-3	- .76	3.11	-2.89	6.95
N5-2	1.14	1.17	1.24	- .77
N6-1	-3.03	-3.50	-4.91	3.47
N7-4	1.14	1.17	.81	1.16
N8-3	2.27	-2.72	-6.61	4.25
N9-2	-3.41	4.28	.0	- 4.25
N10-1	-4.17	.78	6.61	- .77

TABLE NO. III-c

	1st Ply	2nd Ply	3rd Ply	4th Ply
Maximum Per Cent Variation	4.92	4.28	6.61	11.2
Minimum Per Cent Variation	.75	.78	.0	.77
Per Cent Under 5 Per Cent Variation	100	100	80	70

TABLE NO. IV-a—Results Obtained with Scott Machine

Identification	Pounds Pull 1st in.	2nd in.	3rd in.	Ave. 1st Ply	Pounds Pull 1st in	2nd in	3rd in	Ave. 2nd Ply	Pounds Pull 1st in	2nd in	3rd in	Ave. 3rd Ply	Pounds Pull 1st in.	2nd in.	3rd in.	Ave. 4th Ply
S1-3	24	24	24	24	26	24	26	25.3	24	24	24	24	25	27	26	26
S2-2	26	27	26	26.3	23	27	24	24.7	23	23	23	23	25	26	25	26
S3-1	26	25	27	26	25	26	24	25	24	23	22	23	24	24	25	24.3
S4-4	25	26	26	25.7	23	23	22	22.3	23	21	23	22.3	24	24	23	23.7
S5-3	30	28	30	29.3	22	23	23	22.3	23	22	20	21.7	24	25	24	24.3
S6-2	26	26	26	26	21	22	23	22	22	21	22	21.7	25	25	25	25
S7-1	25	25	25	25	25	26	26	25.7	25	23	22	23.3	24	25	25	24.7
S8-4	28	27	26	27	24	25	26	25	23	22	21	22	24	25	25	24.1
S9-3	28	27	27	27.3	22	22	22	22	24	21	23	23	24	24	24	24
S10-2	25	24	23	24	24	23	26	24.7	22	22	22	22	24	24	24	24
Average				26.1				23.9				22.6				24.6

The Variability of Crude Rubber

By John B. Tuttle

When plantation rubber first came on the market in appreciable quantities, the rubber manufacturers found that there was considerable variation between any two lots, and for some time this fact created quite a prejudice against the use of plantation rubber. At first, it was thought that the trouble was entirely due to the way in which the rubber was coagulated and dried; and, by exposing the wet coagulum to smoke during the drying, attempts were made to duplicate, as far as possible, the method of coagulation used in preparing the best grade of wild rubber, viz., Fine Para. The special efforts to produce a smoked sheet of high quality were quite successful, and for some time such rubber commanded a premium over the rest of the plantation rubber. Those smoked sheets were quite uniform in quality, but from our present knowledge, it is quite safe to say that this superiority was not caused by the smoking, but rather by the unusual care which was taken in coagulating, drying, and smoking, and by the fact that only the best quality latex was used in their preparation.

Notwithstanding the improvement in smoked sheets, it soon developed that the problem of variability in crude rubber had not been solved, and at the Rubber Exposition in London in 1914 the subject received wide attention. By this time, the volume of plantation rubber being marketed had increased enormously, and the importance of this problem of variability grew correspondingly. With the increase in the number of factories using plantation rubber, especially where it included those factories without adequate control, the losses became more serious than ever. Although the conference held in connection with the 1914 exhibition discussed this subject at some length, no conclusions were reached as to the correct explanation of the trouble. Since that time, the results of considerable work have been published, largely from the laboratories of the Department of Agriculture, Federated Malay States. These investigators have advanced many explanations as to the cause of variability, and they have adopted a method of measuring the variability in terms of "the rate of cure" and the tensile properties.

The investigations on this subject took the form of vulcanization experiments on compounds containing various proportions of plantation rubber and sulphur. Eaton and his coworkers at Kuala Lumpur, F. M. S., worked entirely with a compound of 90 per cent rubber and 10 per cent sulphur. Stevens used the same formula, while Schidrowitz used 92.5 per cent rubber and 7.5 per cent sulphur. Others used one or the other of these two formulas, but the point to be noted in this connection is that rubber and sulphur were the only constituents of the mixture. The rubber used was prepared in a variety of ways, and the rate of cure and tensile properties were supposed to show the effect of changes in the methods of preparation.

Summary of Eaton's Work

Eaton's work has been summarized in *Bulletin* 27 of the Department of Agriculture, F. M. S., which gives in detail the methods of preparing the various grades of crude rubber, methods of curing and testing, and the results of the tests. The principal studies were with reference to the effect of the various coagulating agents, washing, creping and drying. As a result of his work, Eaton concludes that there are two agencies present in plantation rubber, which act as accelerators in vulcanization. These are:

(1) The vulcanization accelerating agent formed by the biological degradation of proteins or organic nitrogenous matter in the coagulum during the early stages of drying.

(2) A vulcanization accelerating agent, performed in the latex and retained by the dry rubber under certain conditions of preparation. The second substance may possibly be identical with the first, although there are certain indications that they are different.

The accelerator formed by the degradation of the proteins consists probably of an amine or amino acid, probably the former, since it is known that putrescine, which is a degradation product of animal proteins, behaves like an accelerator.

Under the normal temperature conditions in Malaya (about 85° F. in the shade), the maximum amount of the first accelerator is produced during the first 6 or 7 days of drying. By hot-air drying at about 120° to 130° F., the amount of the accelerator produced during the first 6 days is increased, the change being progressive up to the seventh day, after which time little further change takes place. The amount of this accelerator may also be increased by allowing the unpressed, or slightly pressed coagulum (slab rubber) to mature for the period mentioned above. Creping the rubber after this time removes little or none of the accelerator. On the contrary, in coagulum which is machined in thin sheets on the day of, or the day following coagulation, only a small amount of the first accelerator is formed. Thicker sheets take longer in drying and, therefore, will have an intermediate amount of the accelerator. Smoking the fresh coagulum, on accoount of the antiseptic nature of the smoke, inhibits the formation of the accelerator. The products of the smoke which are absorbed by the rubber have in themselves a retarding effect on vulcanization. Sterilization by heat, and refrigeration, inhibit the formation of the accelerator. It will be noticed that mild heating increases the amount of accelerator, whereas strong heat retards the reaction.

The Second Accelerator

The second accelerator, which exists preformed in the latex, will be retained in the coagulum and also in the finished rubber, by any process of preparation which retains all or part of the serum, as for example, evaporating thin films of latex to dryness, etc. Slab rubber evidently contains both accelerators because, owing to the fact that the coagulum has been allowed to dry for 6 days before machining, it is more difficult to wash than the fresh coagulum.

Thus Eaton and his co-workers arrive at the conclusion that the variability in crude rubber is the variability in the amounts of accelerators which may exist before coagulation or may be formed later, and which by the processes of washing and drying are permitted to remain in the crude rubber.

In only one case in the work of the authors cited above, has any attempt been made to work on this problem with compounds at all comparable with those used in commercial work. It is interesting to note in this connection that Eaton, commenting on these tests, states that the variability in the rate of cure has probably been obscured in the case of researches in which such mixings have been employed. He further maintains that although the variability has been obscured, it still exists. Practically no attempts have been made in these researches to use the ordinary commercial accelerators in vulcanizing plantation rubbers.

In ordinary commercial practice in this country there is a small, but certain, amount of material which is produced by the vulcanization of crude rubber and sulphur only. It is customary to attempt to blend the various rubbers by the process of "massing," consisting simply of working a large quantity of crude rubber on the usual mixing mills until it is quite soft, and when thoroughly mixed, cutting off the rubber in the form of small rolls or sheets. In spite of this, it is evident, from the work of Eaton, that there will be considerable variation in the rate of cure from day to day, owing to the different methods employed on different estates. It is evident, therefore, that manufacturers must be constantly on the watch to see that only grades of rubber of as nearly the same rate of cure as possible are used.

Effect of Added Accelerators

However, the vast bulk of plantation rubber to-day is used in mixings in which either organic or inorganic accelerators are present in sufficient quantity to produce a fairly rapid

[1] Presented before the Rubber Division at the 58th Meeting of the American Chemical Society, Philadelphia, Pa., September 2 to 6, 1919. Courtesy of the Journal of Industrial and Engineering Chemistry.

cure. For this reason, it seems as though the work which has been and have been for the benefit of a very small amount of plantation rubber, and does not apply to the balance. We

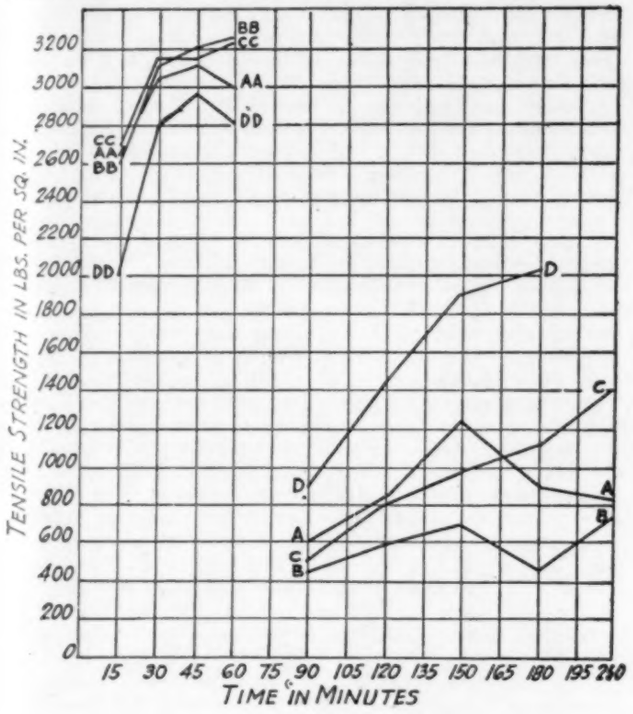


FIG. 1—RATE OF CURE
(Vulcanized at 287°F.)

may divide the substances found in crude rubber, which may influence vulcanization, into two classes:

(1) The accelerators formed in the latex or in the coagulated rubber.

(2) Retarding agents which have been added to the latex or coagulum (such as any coagulating agent which has not been removed by washing), or substances in the smoke which are absorbed by the rubber, etc.

These two classes of substances will always react one against the other, as Eaton has pointed out. The balance between the two will determine the rate of cure. It should be noted here, however, that these substances are necessarily present in very small quantities, and consequently variations, which in themselves are small, will in the absence of fillers and added accelerators produce considerable effect on the rate of vulcanization and the tensile properties. When accelerators are used these differences are of little importance, because the amount of accelerator which is added to a compound is sufficient in itself to vulcanize the compound correctly, and the presence of these minute amounts of accelerators found by Eaton will have little, if any, effect on the vulcanization and tensile properties of such compounds. Not only are these differences small, but they are not necessarily indicative of the true quality of the rubber.

Let us consider, for example, a comparison of latex which is coagulated immediately after collection, machined at once, and dried as quickly as possible. According to Eaton's experience, such a rubber would have very little of either type of accelerator, and would therefore have an unusually slow rate of vulcanization, and the tensile properties would be abnormally low. In spite of this, it must be obvious that this rubber should be of superior quality, because it has not been exposed to the fermentation processes and to other deteriorating agents. On the other hand, slab rubber has been exposed for some time to these agencies, and it does not seem probable that their effect would be beneficial. Yet this is exactly the couclusion which we must draw if we are to accept Eaton's explanations.

The author has at various times tested rubber which had different rates of cure when rubber and sulphur only were used, and found that in many cases these differences largely disappeared with the addition of, say, 2 to 4 per cent of litharge, or 0.50 to 1 per cent of the common organic accelerators, such as aniline, hexamethylenetetramine, etc. Some of the results of these tests are given in Tables I, II and III.

TABLE I—RATE OF CURE

Time Minutes	Tensile Strength Lbs. per Sq. In. Compound A	Compound B	Compound C	Compound D
90	600	450	500	900
120	850	550	800	1450
150	1250	700	950	1900
180	900	450	1100	2050
210	850	750	1400	..

TABLE II—RATE OF CURE

Time Minutes	Tensile Strength Lbs. per Sq. In. Compound AA	Compound BB	Compound CC	Compound DD
15	2650	2600	2700	2000
30	3050	3100	3150	2800
45	3150	3200	3150	2950
60	3000	3300	3250	2800

TABLE III—EFFECT OF SMALL AMOUNTS OF ACCELERATORS

Time Minutes	Tensile Strength Lbs. per Sq. In. Compound G	Compound H	Compound I	Compound J	Compound K
1	..	..	..	..	1550
2	..	..	..	..	2700
3	..	..	..	..	3300
5	..	..	..	2100	3400
7	..	..	..	..	3250
10	..	..	..	2400	..
15	..	..	2000	2950	..
20	..	..	..	3150	..
25	..	..	..	3250	..
30	..	..	2350	2950	..
45	..	..	2150	..	..
60	..	500	1850	..	..
75	..	450	950	..	..
90	1000	500	..	..	..
105	..	625	..	..	..
120	1150	600	..	..	..
150	1250	..	..	..	..
180	1800	..	..	..	..
210	1100	..	..	..	..

The results given in Tables I and II are represented graphically in Fig. I. Curves *A*, *B*, *C*, and *D* (from Table I) show the rate of cure on rubber from different estates, using a compound containing 90 per cent rubber and 10 per cent sulphur.

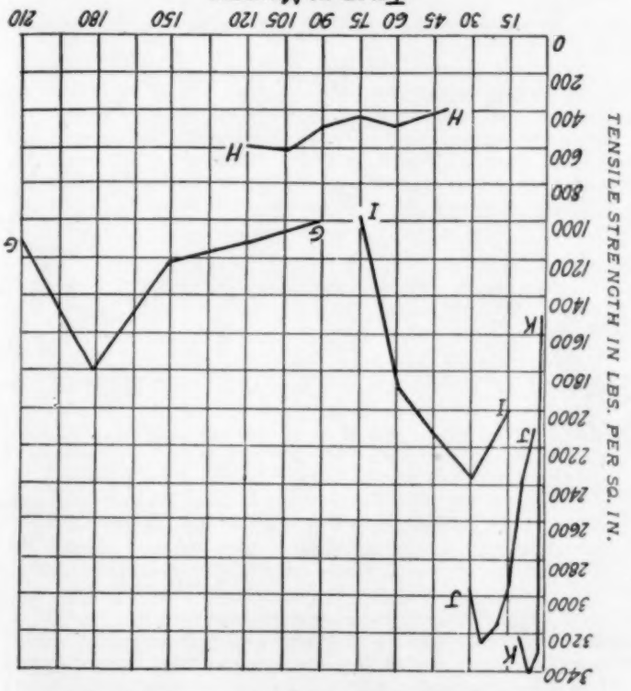


FIG. 2—EFFECTS OF SMALL AMOUNT OF ACCELERATOR
(Vulcanized at 287°F.)

Curves *AA*, *BB*, *CC*, and *DD* (from Table II) represent the same estates, mixed according to the formula: 48 per cent rubber, 48 per cent zinc ixide, 3 per cent sulphur and 1 per cent hexamethylenetetramine. In these compounds, *A* contains the same rubber as *AA*; *B* the same as *BB*; *C* the same as *CC*;

and *D* the same as *DD*. We have here a few illustrations, among many that could be quoted, where different estates, which vary widely when only rubber and sulphur are present, show an excellent degree of uniformity when mixed with zinc oxide and a sufficient amount of accelerator.

It may be that the mere fact that Compounds *AA*, *BB*, *CC* and *DD* cure at the same rate does not necessarily prove that the lots of rubber are of the same quality. However this criticism will hold for all of the work done by Eaton, Stevens and the others, who compare lots of rubber by means of tensile properties, and the rate of cure.

The results given in Table III are plotted in Fig. 2, and show the effect of the addition of another accelerator (the carbon bisulphide addition product with dimethylamine), with and without zinc oxide. The rubber used in these tests was blended from ten estates, all of them regarded commercially as of excellent quality. The formulas used are as follows:

G—90 per cent rubber; 10 per cent sulphur
H—99.9 per cent compound G; 0.10 per cent accelerator
I—90 per cent compound H; 10 per cent zinc oxide
J—48 per cent rubber; 48.96 per cent zinc oxide; 3 per cent S; 0.04 per cent accelerator
K—48 per cent rubber; 48.9 per cent zinc oxide; 3 per centS; 0.10 per cent accelerator

From these curves it will be seen that the addition of only 0.10 per cent of what, under proper conditions, is a remarkably active accelerator is sufficient to retard almost entirely the vulcanization of the rubber. The addition of 10 per cent of zinc oxide is sufficient to overcome this retarding effect, as is shown in Curve *I*. The remarkable qualities of this accelerator are shown in Curves *J* and *K*, which contain 0.04 per cent and 0.10 per cent, respectively.

In an effort to find out whether or not the zinc oxide was responsible for the change in the rate of cure, portions of compound H were mixed with neutral barium sulphate, lampblack, tale, whiting, and lime, in the ratio of 90 per cent of compound *H* to 10 per cent of the pigment. The barium sulphate and the lampblack produced no effect, and the tale practically none, while the whiting and lime showed a vast improvement in the rate of cure and tensile properties. The results with whiting and lime do not quite reach the values for Curve *I*, but this is only to be expected, since it is well known that the coarser pigments do not give as high tensile properties as the finer ones.

The whole point in this discussion is that it is not sufficient to bring together rubber and sulphur, and then assume the presence and action of an accelerator, merely because one method of preparation produces a somewhat more rapid cure than another. The above results could be extended to show that with many organic accelerators (and Eaton is dealing with organic accelerators in the latex) it is necessary to have the proper environment in order to develop the maximum, or even any accelerating action. It is not the intention of this article to doubt that certain methods of preparation which are used on some plantations are actually injurious to the rubber, and this injury will be reflected in the short life of articles made from such rubber; but on the other hand, it is undoubtedly true that certain methods of preparation permit the formation of small amounts of accelerators or other substances which affect the rate of cure, without really changing the quality of the rubber. It has been assumed that when the rate of cure is increased, these substances are accelerators, whereas it may be true that the change is only one of passing from an acid to an alkaline environment, in which state it is possible for the accelerators already present to function in their normal manner.

The real object of this article is to point out the fact that it is absolutely unfair to compare the rate of cure under such limited conditions as obtain in the tests where rubber and sulphur only are used. What has really been done is to discuss the variability, not in the grade of rubber itself, but in either the presence or absence of what we may call foreign substances, which may be accelerators themselves, or may produce an environment which will permit other accelerators to function. In this way, the real variation in the rubber is obscured by unduly emphasizing the variation in the rate of cure caused by minute quantities of decomposition products. The proper procedure would be to add to each mixture a sufficient quantity of zinc oxide to be certain that the vulcanization will take place in an alkaline medium. Probably 2 to 5 per cent would be sufficient for this purpose, and the results thus obtained would be of real value in determining the variation in the rate of cure, because in this way the conditions of vulcanization would be more uniform than is the case at present, and hence the results would be more truly comparable.

Summary

Attention is called to the fact that the usual method of testing for variability in crude rubber really determines the variability in the amounts and character of certain foreign substances which, in the absence of pigments which will produce an alkaline medium for the reaction, tend to obscure the variation which may exist in the rubber. Tests show that as little as 0.10 per cent of a remarkably strong accelerator is sufficient, in the absence of alkaline fillers, to retard the vulcanization almost entirely. It is recommended that all tests, intended to discover the variability in the crude rubber, be performed on mixtures to which has been added from 2 to 5 per cent zinc oxide, in order to eliminate the retarding effect which might be caused by small quantities of foreign substances or decomposition products.

Rubber Used as a Street Pavement

Attempts have been made to use rubber in the paving of streets from time to time. The main difficulty has been the inability of the rubber layer, which is vulcanized on flat steel plates, to withstand heavy loads for any length of time. A special report has been issued recently by A. Harrison on certain tests made to overcome this disadvantage.

In August 1913, tests were made in a small street in London with rubber pavements. The rubber was vulcanized on to hard wood blocks and the street was paved with these blocks. The test lasted for eighteen months and then the pavement was examined. On the upper surface the blocks showed small cracks and on their lower surface they were very badly damaged. It could be determined that these rubber covered blocks had but a slightly beneficial effect on the slipping of horses but the imprints of the hoofs were clearly visible. The rapid deterioration of the rubber coating must be laid directly to the ineffective fastening of the rubber layer to the wooden blocks, from which it was loosened by the friction of the vehicles passing over it.

For this reason another method of making the pavement was devised. The thin rubber coating was vulcanized on flat steel plates and these were fastened to wooden blocks by means of bolts. These were laid in a substratum of broken stone mixed with fine sand. A short time after these blocks were put down, a number of them had their rubber top-coating loosened from the steel supports. These were replaced by new coatings of rubber. Nevertheless after several months over fifteen per cent of the blocks had lost their rubber coverings.

Then the flat steel plates were replaced by others made of malleable metal, which could be imbedded in the vulcanized rubber. This sort of rubber pavement seems to stand up very well, but it must be tested out for some time to come as yet, before it can be said that the problem has been solved.

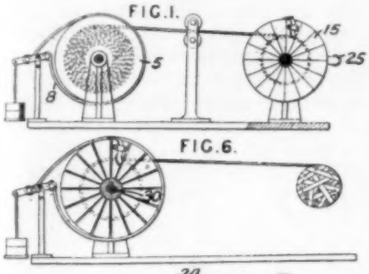
There are various advantages of the rubber pavements in comparison with those in general use. While the rubber pavement may be more costly than the others, nevertheless the economy in its use comes from its greater durability. It does not dust, it is clean and easy to be kept clean, consequently a sanitary street covering, and in particular it is not slippery. The noise of traffic over rubber paved streets is practically nil, and the shock of the traffic is absorbed by the pavement and not transmitted to the buildings on the streets. The most important consideration in the making of this pavement is to fasten the rubber to a suitable support so that its durability is increased as far as possible.

ABSTRACTS

Technical — General — Commercial

Making Golf Balls and the Like

A patent has just been issued, British Patent No. 160910, on a process and apparatus for making golf balls and other balls of the type in which the rubber strands are wound around a resilient core. The strands are alternately stretched and relaxed for quite a long time before they are finally wound upon the core at a tension exceeding that at their original elastic limit.



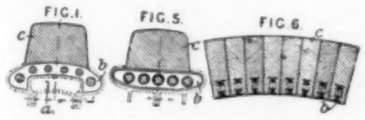
DEVICE FOR MAKING GOLF BALLS

The apparatus for carrying out this process consists of a spool 5 (see Fig. 1) which is provided with a brake band 8 and upon which the rubber strands are wound at the outset. An expansible spool *15* (details are shown in Fig. 4) is used to wind these strands in their layers from the spool *5* by means of the handle *25*. The expansible spool is composed of sectors held together by rubber bands *24* and is mounted upon a shaft *16* having conical collars *20* for expanding the spool after the strands have been wound upon it.

The expansible spool is removed from the apparatus and the conical collars are forced inwardly at intervals so as to extend the strands to their final limit, after which the spool is mounted upon a winding shaft *30* (see Fig. 6) and the strands wound upon the core. When one expansible spool is exhausted it is removed from the apparatus and another spool is put in its place. In this way the process is continuous. The resilient cores may contain compressed air.

Solid Block Tires

British Patent No. 161444 describes the manufacture of a solid rubber tire from a series of rubber blocks, Each block *c* is carried by a perforated metallic plate *b* which may be shaped to embrace a rim *a* (Fig.1) or to fit a standard rim as indicated in Fig. 5. Fig. 6 shows a circumfluential section of the tire in which the plates are formed with flanged edges to provide increased rigidity.



RUBBER BLOCK SOLID TIRE

Reworking Rubber and Similar Products

A process for treating rubber, either the natural product or imitations thereof, gutta-percha, resinous rubber and other similar materials, and for obtaining therefrom a product of increased plasticity and dielectric power is described in British Patent No. 160779.

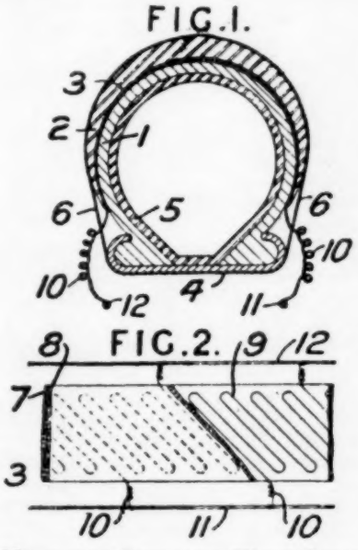
The vulcanized rubber is ground up and mixed with about 10 per cent by weight of water containing 2% glycerine and 2% pariffin in powder fragments. The mixture is heated until the reaction sets in.

Rubber Heels with Protection against Slipping

A patent has been applied for covering rubber heels with a protective device against slipping on wet pavements. Depressions are cut into the heel and are filled half way with plates made from a tough strong material, in order to yield a hold to the nails used to fasten the heel to the shoe and to prevent them from pulling through the rubber. The position and arrangement of the depressions one under the other make it possible to attach the heel parallel to and near as possible to the edge of the heel. This is very important.

Retreading Tires

The replacement of a worn tread on a tire has always been more or less of a difficult proceedure, but a recent British Patent, No. 161009, seems to overcome this difficulty very handily by the aid of an ingenuous vulcanizing device. Between the body of the tire and the tread there is interposed a heating element, composed of two layers of unvulcanized rubber between which there is placed a wire which is capable of being heated by an electric current.



METHOD OF REPLACING WORN TREAD

A wire 9 in Fig. 2, is placed upon a strip of rubber. The wire is bent into a series of parallel reverse loops extending preferably obliquely across the strip. At equal distances the wire 9 is cut and the two ends thus formed are bent outwards and connected at 10 to beads 11 and 12. A second layer of rubber 8 is then pressed on the first embedding the loops.

The cover 1 (Fig.1) with inner tube 5 is mounted on a rim 4. The part 3 is placed on the tire. The tread 2 is bound on with tapes 6, the tube 5 is inflated and a current is passed through the wire. After vulcanization the ends 10 are cut off. In a modification of the patent the wire is pressed into contact with a single layer of rubber.

Fastening Tire Tubes with Fabric Layers in the Casing

In the original patent, German Patent No. 326,448, the outer layers of the strips of fabric running out in a forked shape along the edge of the felloes are led around the same and the wires which are found in the ends are tied together by means of a number of fasteners. In taking on or off the tire tube, these must be fastened or loosened, which takes time.

According to the patent in question, German Patent 334,941, the outer layers of fabric are made shorter in length and together with their wire inserts are imbedded in the grooves of the felloes. In this way the mounting of the tire tube is facilitated.

A Surgical Syringe Which Can Be Taken Apart

The German Patent Application No. 771,262 describes a new form of surgical syringe which can be taken apart so that it can be cleaned easily and thoroughly. The end of the syringe where the liquid emerges is fastened on to the glass cylinder by means of a projecting piece which screws on to a metallic ring, fastened tightly and permanently to the glass cylinder. The piston end of the syringe can not be unscrewed but the cap of the piston rod can be unscrewed to such a point that the piston head may be pushed far enough out of the lower end of the cylinder that the conical shaped part can be replaced.

The Solubility of Certain Crystalline Substances in Rubber and the Making of Transparent Rubber

G. Bruni in the "Giornale di Chimica Industriale ed Applicata" of February 1921 describes certain experiments in which he observed that a mixture of 10 per cent of azobenzene with rubber produced a completely transparant gelatinous mass. When this jelly was allowed to stand it lost its transparency and crystals of azobenzene precipitated out. When it was heated, then the transparent conditions appeared again. It appears that azobenzene is dissolved by rubber in the hot condition. The same results were obtained with naphthalene and para-toluidine.

Heating India Rubber

In the heat treatment of rubber for the purpose of reforming rubber articles or vulcanizing, a solution is used whose boiling point is at or slightly below the temperature at which the process is to be carried, so that the solution itself is at its boiling point or slightly below. Solutions of calcium chloride are preferred for this purpose, the boiling points of which rise approximately 10 degrees Fahrenheit for every half pound of the salt to 1.5 pints of water. Several forms of apparatus for carrying out the invention are described. (see British Patent No. 161,648). Articles or the molds containing them may be immersed directly in the liquid, or placed in a jacketed vessel. The jacket of which contains the solution directly heated or circulated from an outside heater. Hollow bodies may have the hot solution pumped into the interior.

The Manufacture of Soft and Elastic Rubber Articles

The Bayer Co., the large German dyestuff concern, has patented a process (see German Patent No. 326,819) of making soft rubber articles of greater strength and extensibility by the addition of antimony pentoxide to the vulcanization mixture. The pentoxide acts as an accelerator and a color former. The red rubber products that are obtained in this way have a greater softness, extensibility, elasticity and strength than those manufactured with antimony pentasulphide.

Methods of Making Friction Tests

(Continued from page 249)

TABLE NO. IV-b—Percentage Variation from the Average

Identification	1st Ply Ave. lbs. 26.1	2nd Ply Ave. lbs. 23.9	3rd Ply Ave. lbs. 22.6	4th Ply Ave. lbs. 24.6
S1-3	-8.04	5.86	6.70	5.69
S2-2	.77	2.51	1.77	2.44
S3-1	- .38	4.60	1.77	-1.22
S4-4	-1.53	-6.69	-1.33	-3.66
S5-3	12.26	-6.69	-3.98	1.22
S6-2	.38	-7.96	-3.98	-1.63
S7-1	-4.21	7.54	3.10	.41
S8-4	3.45	4.60	-2.65	.41
S9-3	4.60	-7.96	1.77	-2.44
S10-2	-8.04	2.51	-2.65	-2.44

Discussion

Table Va. In the tabulation of these results it will be observed that a deduction of two pounds has been made from the pull obtained for the fourth ply. The reasons for this have been covered in the explanation following Table Ia.

The results obtained by the Dead Weight and Cooey machine for all practical purposes are identical. They represent the results when the rate of separation was one inch per minute. The results obtained by the Navy and the Scott machines are likewise identical for all practical purposes. They represent the results obtained when the rate of separation was twenty inches per minute. A comparison between the first two methods and the last two shows that the rate of separation has a direct effect on the friction pull obtained, but not nearly as much as might be expected. Increasing the rate of separation from one inch per minute to twenty inches per minute increases the friction pull by approximately one pound.

TABLE NO. IV-c

	1st Ply	2nd Ply	3rd Ply	4th Ply
Maximum Per Cent Variation ..	12.26	7.96	6.70	5.69
Minimum Per Cent Variation ..	.38	2.51	1.33	.41
Per Cent Under 5 Per Cent Variation	70	40	90	90

Tables Vb and Vc

A comparison of these results shows that by the Dead Weight method the greatest variations are obtained. The variations obtained by the three machine methods are about the same. The larger variations by the Dead Weight method are due to the personal equation which necessarily enters into this method of testing.

Table Vd

Again in this table as in the two preceeding the results show that the Dead Weight method gives the greatest variations and that the three machine methods are about alike in the uniformity of results.

Conclusion

When the sample is taken longitudinally from the belt and the friction pulls of the plies are tested in succession straight through the belt with no attempt to control the angle of separation results show:

1st. The friction pull obtained with a separation of twenty inches per minute is approximately *one pound* higher than when the rate of separation is one inch per minute when the friction pull is in the neighborhood of twenty pounds.

2nd. Machine test results are more *uniform* than Dead Weight test results.

COMPARISON OF AVERAGE VALUES OBTAINED

TABLE NO. V-a—Pounds Pull

Method of Test	1st Ply lbs. Pull	2nd Ply lbs. Pull	3rd Ply lbs. Pull	4th Ply lbs. Pull
Dead Weight	24.9	23.7	22.2	22.1
Cooey	24.3	23.7	21.5	20.3
Navy	26.4	25.7	24.2	23.9
Scott	26.1	23.9	22.6	21.6

TABLE NO. V-b—Maximum Per Cent Variation from Ave.

Method of Test	1st Ply	2nd Ply	3rd Ply	4th Ply
Dead Weight	20.49	-11.39	-9.91	-16.17
Cooey	5.35	11.39	6.98	5.83
Navy	4.92	4.28	6.61	11.20
Scott	12.26	7.96	6.70	5.69

TABLE NO. V-c—Minimum Per Cent Variation from Ave.

Method of Test	1st Ply	2nd Ply	3rd Ply	4th Ply
Dead Weight	.4	1.27	- .91	- .42
Cooey	.82	1.24	2.33	1.35
Navy	.75	.78	.0	.77
Scott	.38	2.51	1.33	.41

TABLE NO. V-d—Per Cent Under 5 Per Cent Variation from Ave.

Method of Test	1st Ply	2nd Ply	3rd Ply	4th Ply
Dead Weight	30	70	80	60
Cooey	90	50	80	90
Navy	100	100	80	70
Scott	70	40	90	90

NEWS OF THE INDUSTRY

News -- Personals -- Financial -- Building Activities -- New Products

Tariff Bill Reported to House

New Tariff Act Sponsored by Representative Fordney Introduced in the House of Representatives at Washington—Duties Average Ten Per Cent Less Than Payne-Aldrich Act

Of great interest to manufacturers and importers throughout tha country is the long-expected Fordney Tariff Bill, prepared by Republican members of the Ways and Means Committee, which was introduced in the House of Representatives by Representative Fordney on June 29. The bill will be submitted to the Democratic members of the committee whose objections were overruled and will then be reported to the House with the recommendation that it be acted upon and passed.

The bill in general is along the lines of the Payne-Aldrich Act of 1909 and provides for a general average of tariff duties of 56 per cent. This is ten per cent lower than the average of the Payne--Aldrich Act. The free list is considerably shorter than it is under the present existing tariff. The bill, moreover, contains provisions giving the President the right to impose retaliatory duties on governments which imposes higher duties than the United States imposes on similar products.

Valuation of Imported Goods

One most important feature of the new bill relates to the valuation of imported goods. The section provides in substance that an invoice of imports must contain a statement of the exporter abroad of the cost price of the imported article, together with a statement of the actual money values in the country of origin. These money values will be compared at the customs house in this country with the values in American dollars, and the value of the goods will be determined on that basis.

Rubber On Free List

According to the provisions of the act "india rubber, and gutta percha, crude, including jelutong or pontianak, guayule, gutta balata, and gutta siak, and scrap or refuse india rubber and gutta percha fit only for re-manufacture" are not dutiable and remain on free list.

Manufactures of india rubber and gutta percha are dutiable at 20 percent ad valorem; insulating materials "wholly or partly manufactured, composed wholly, or in chief value of india rubber or gutta percha" are duitable at 30 per cent ad valorem. Manufactures of rubber, known as hard rubber, vulcanized or unvulcanized are to be assessed at the rate of 30 per cent. Tennis and golf balls will also be taxed at 30 per cent. Automobiles, not including tires, will be duitable at the rate of 25 per cent ad valorem.

Tire fabric or fabric for use in pneumatic tires, including cord fabric, will be assessed at the rate of 25 per cent ad valorem. Numerous changes occur in the duties to be levied upon chemicals and compounding materials.

It seems to be the consensus of opinion, however, that the new tariff will have but little effect upon the rubber manufacturers of the country in view of the fact that rubber, the basic material of the industry still remains upon the free list.

Danger of Tariff Wall

A high rubber official, while stating that his own company was not making an official statement in the proposal of increasing tariff on tires in any way, said that it might seriously hit some exporting manufacturers. Certain hard rubber goods which are manufactured in this country, he thought, should be protected.

"On tires, however," he said, "this country does not need protection and the possibility of a retaliatory tariff wall is really dangerous."

This official points to the action of the Canadians in enacting a high tariff on manufactured goods generally immediately after the congress adopted the protective tariff on farm products and foodstuffs. Akron tire manufacturers which do not have factories in Canada are feeling the result of this new Canadian tariff already, he declared.

Townsend Bill Gains in Senate

Supporters of the Townsend bill, which advocates a Federal Highway Commission with a system of building roads and attending to their maintenance, have been heartened by the recent actionof the Senate. The action of the Senate in referring the Phipps-Dowell bill, which has already passed the House,, to the Senate Committee on Post Offices and Post Roads is taken to be in the nature of a temporary quietus to the latter measure. It is now stated that this measurecannot be considered by the Senate until such time as the Townsend bill shall have been considered and discussed.

The support of the automobile and tire trade has crystalized behind the Townsend bill. The Rubber Association of America has beenparticularly active in urging itsmembers to work together in urging its adoption.

Hoover Interested in Statistics

The Board of Directors of the Rubber Association of America in conjunction with its regular monthly meeting held at Washington recently, conferred with Secretary of Commeree Hoover, relative to his desire to gather, in co-operation with the trade organizations representing the basic industries of the United States, authentic information concerning inventory, production, sales, production capacity, etc., in those lines.

Relative to his desire to bring about closer contact and greater co-operation between business and the Department of Commerce, Secretary Hoover's plans may be described briefly as follows:

1—Increased efficiency with respect to the commercial activities of the Department of Commerce in foreign markets, this work to be aided by the employment of specialists in the Department who will have a thorough knowledge of the needs of the key industries.

2—Collection and compilation of data indicating current conditions in the basic industries relating to raw material stocks, production, inventory and sales of finished goods, etc.

3—Assist business in "simplification" of products for the purpose of bringing about maximum economy in production and distribution.

The directors indicated to Secretary Hoover their willingness to co-operate in this plan and later conferences will be held between the Department and the various divisions and committees of the Rubber Association interested.

New Brazilian Rubber Factory

In addition to the Cia. Brasileira de Artefactos de Borracha (successors to the Industria Brasileira de Borracha Berrogain, Ltda.), which has been manufacturing rubber products for some time and which soon will have a daily production of 250 tires, 250 inner tubes, and 50 solid tires, Sao Paulo, Brazil, is also to have another factory to help take advantage of Brazilian rubber and avoid the necessity of importing so much rubber goods. The new establishment is to be a stock company known as the Sociedade Anonyma Fabrica Nacional de Arte-factos de Borracha and capitalized at 300,000 milreis. The first-named company is capitalized at 6,000,000 milreis.

Pennsylvania Declares Dividend

Directors of the Pennsylvania Rubber and Supply Co. declared a regular quarterly dividend of 2½ per cent on common stock and 1¾ per cent on preferred, payable June 30.

News from the Rubber Metropolis

New Control for Amazon—Fort Wayne May Reorganize—Goodyear Business Improves—Akron-Universal Expands—Re-employment Increasing in Akron—Geer Returns from Europe

New Control for Amazon

(Special Akron Correspondence)

A group of Akron, Cleveland and Canton men have assumed control of the affairs of the Amazon Rubber Company, it is announced in Akron. A program of refinancing and reorganization has been approved by the stockholders.

Dr. E. E. Quirk, president of the company, and its board of directors retire July 20. The new group expects to have completed its refinancing plan by that date. Bonds against the plant are to be sold to raise additional capital. The production is to be increased as rapidly as possible by the new officers.

L. J. Schott, former general manager of the Amazon, will head the company when it is reorganized, it is said.

Fort Wayne May Reorganize

With no less than three concerns taking an active interest in the sale of the building and property of the Fort Wayne Tire & Rubber Company on July 5, it is predicted that bidding will be keen.

In addition to these concerns which have been seeking information regarding the local property, it is probable that some of the stockholders of the defunct company will take part in the bidding, and if successful in acquiring it, will attempt to reorganize a new company.

Authority to sell the property at private sale has been granted to Attorney David Vesey, trustee in bankruptcy for the stockholders, by Harry C. Sheridan, referee. Mr. Vesey recently went to Frankfort accompanied by Attorney Ben. F. Heaton, who is also interested in the matter. Upon their return to Fort Wayne Mr. Vesey stated that the property was appraised at $275,000, and it is expected that at least half that amount will be realized from the sale.

Goodyear's Business Improves

L. C. Rockhill, sales-manager of the Goodyear Tire and Rubber Co. explained the increase in production and hiring of extra help in a recent interview accorded representatives of Akron newspapers, as follows:

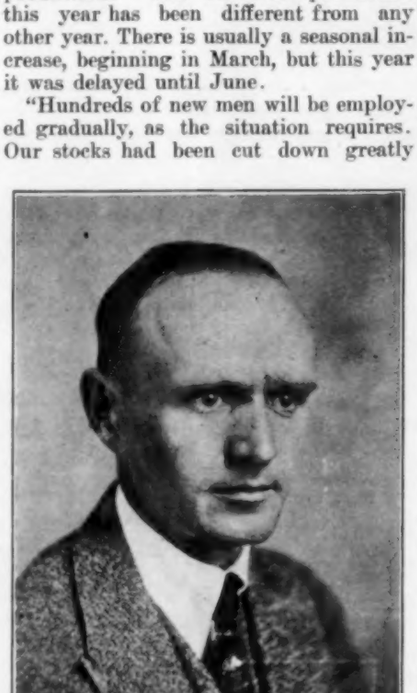
"We are gradually working back to normal. The period of extreme depression is over. It's not a sensational increase in production but a gradual comeback. About 1000 more men have been hired in the last few days. We shall continue to hire men as our demands require.

"There have been foolish rumors circulated about our increased production. One day we heard that we had a large order from England and now you are asking about large orders from Japan and Russia. These rumors are ridiculous.

"The whole story is contained in the fact that business is staging a healthy comeback after near panic conditions.

"There is no way of telling today just how great an increase will be made in production. The curve of production this year has been different from any other year. There is usually a seasonal increase, beginning in March, but this year it was delayed until June.

"Hundreds of new men will be employed gradually, as the situation requires. Our stocks had been cut down greatly



L. C. Rockhill

and recently we found they had reached a point lower than necessary. Dealers began to send in new orders, and the export trade began to pick up, though relatively we have larger stocks in our foreign depots than in America.

"The outlook is good but not sensational."

Akron-Universal Expands

Following closely the taking over of the Superfix Rubber Co. plant at Elyria by the Akron-Universal Tire & Rubber Co. Medina, Ohio, a few weeks ago, comes the information that the same company has purchased the Keek Manufacturing Co. plant at West Unity, Ohio, manufacturers of the Keek Safety Boot.

Herbert C. Keek, inventor of the boot, will move to Medina and superintend the manufacture of the product that bears his name.

Fred Stern Personnel Changes

Paul Bloom, formerly Chicago representative for Fred Stern & Co., crude rubber dealers, has been transferred to the management of the Akron office in the Peoples' Trust & Savings Building. Clinton H. Taverniere, formerly Chicago representative for Charles E. Wood, has succeeded Mr. Bloom as manager of the Chicago office.

Re-employment Increasing in Akron

(Special Akron Correspondence)

Tire manufacturers of the Akron district are prepared to make July production the largest of any month of the current year, according to reports emanating from the various rubber company offices.

The Goodyear Tire & Rubber Company according to reports is prepared to manfacture 22,300 casings a day during the present month. The output of tubes will be somewhat larger than the tire figure.

Dealers' business is responsible for the great manufacturing activity at Goodyear, it is said and sales to dealers are running ahead of the same period a year ago. Goodyear factory officials gave out orders after the Fourth of July holiday for a three-shift schedule in some departments putting the big East Akron factory on a high-speed production basis for the first time in over a year.

Firestone Tire & Rubber Company officials have increased the working hours in that plant from eight to nine hours a day with a half day on Saturday in order to take care of a steady increase in sales of small-sized tires. Plant Two went on a nine-hour basis and is to work a half day Saturdays. The company is now making 85,000 tires a week, it is said.

The same conditions are holding good in many other factories, according to reports made to trade organizations.

The B. F. Goodrich Rubber Co. plants closed for ten days from June 25 to July 5, are showing more activity now. The shut-down was for the purpose of the semi-annual inventory.

The increased activity in the rubber factories has done much to alleviate unemployment in Akron. Employment agencies report that over 5,000 men have been given work during June and the first week in July. Goodyear alone has added 3,000 men to the factory payroll, it is said. Experienced tire builders are in demand, but companies are employing only Akron residents. This is being done to take up the surplus of labor in the city.

It isn't tire business alone that is causing Akronites to turn from pessimistic to optimistic expressions on trade conditions. Orders for rubber footwear are said to be about eighty-five per cent of last year's volume. Railroads are starting to buy supplies, especially air-brake hose. And so on down the line.

It is also said that the tire business is picking up among automobile manufacturers and that there has been a substantial spurt in original equipment tire specifications for July.

Geer Returns from Europe

Dr. W. C. Geer, vice-president in charge of development of the B. F. Goodrich Co., Akron, Ohio, returned from a European tour on July 1 on the steamship *Adriatic*. While in London Mr. Geer addressed the Fifth International Rubber and Tropical Products Exhibition on the subject of "Ten Years Experience with Aging Tests".

News from the Trenton Manufacturers

Takes Over Output of Eckrode Rubber—Miller-Steiner in Production Soon— New Jersey Plants on Part Time—Firms Add Improvements—Trent Will Continue to Operate

Takes Over Output of Eckrode Rubber

E. A. Sattler, until recently director of sales of the Howe Rubber Corporation, New Brunswick, N. J., and Theodore Weigele, formerly assistant sales manager of the same company, have taken over the sale of the entire output of the Eckrode Rubber Company, Inc., of Newark, N. J., of which Clement E. Eckrode is president. Mr. Sattler was elected vice-president of the company at a recent meeting of its board of directors.

The principal products of the Eckrode plant at this time are automobile red inner tubes and repair accessories, all of which are well known throughout the Eastern states, to which section sales have heretofore been confined. Mr. Sattler and Mr. Weigele, however, are organizing their forces with a view to national distribution before the year's end. Their operations will be conducted under the name of Eckrode Rubber Company, with offices in the Viehmann Building, New Brunswick, N. J.

Miller—Steiner in Production Soon

(Special Trenton Correspondence)

The Miller-Steiner Rubber Company, of 678-694 North Olden avenue, Trenton, N. J., has filed a certificate of incorporation in the office of Secretary of State at Trenton, with an authorized capitalization of $100,000 divided into 1,000 shares of the par value of $100. The incorporators are George W. Page, 1438 Brunswick avenue; John H. Miller, 1845 Greenwood avenue, and Julius D. Steiner of 101 West End avenue, Trenton, N. J.

The new company has taken over the plant of the Olden Rubber Company on North Olden avenue. Operations will begin shortly upon completion of alterations and installation of new machinery. Mechanical rubber goods and specialities will be manufactured by the new company.

Mr. Miller, who is president of the company, will also be general manager, and will be assisted by Mr. Steiner. Both have had extensive experience in the rubber industry, having been connected for a number of years with the Empire Rubber & Tire Corporation and other rubber plants. Mr. Page, who is one of the Trenton city commissioners, holds an inactive interest in the company. The Olden Rubber Company was organized several years ago by Isarel H. Albert.

Inventors Interest in Ideal Wheel

(Special Trenton Correspondence)

Joseph H. Dwork, inventor of an auto tire, will receive but $2,000 for his interest in the Ideal Wheel & Tire Company, Newark, N. J., which was organized for the manufacture of the product. This decision was announced by Vice Chancellor Backes, who contended that Dwork was not entitled to a dividend on the surplus because the patent was not assigned. Dwork received 2,500 shares worth $25,000 from the tire company, of which he was originally a half owner. The company became insolvent some time ago because a war embargo on rubber prevented exploitation of the invention.

New Jersey Plants on Part Time

(Special Trenton Correspondence)

The New Jersey Rubber Company, of Lambertville, N. J., is running on part time. The Lambertville, (N. J.,) Rubber Company is also operating on part time. The boot department is running but three days a week, and the band room has a small force at work. The bal department has been closed down.

Trenton Firms Add Improvements

(Special Trenton Correspondence)

The Thermoid Rubber Company, Trenton, N. J., has erected an addition to the office building to provide room for additional office force. The Hamilton Rubber Manufacturing Company, Trenton, N. J., has installed additional machinery to the works by erecting a new foundation, six by thirty-six feet.

United Tire Incorporates

(Special Trenton Correspondence)

The United Tire Company, of renton, N. J., has been incorporated with $10,000 capital to import, buy and sell tires, etc. The incorporators are Abe Black, Peter M. Dorsey and Harry Davidson, all of Trenton, N. J. The company has offices at 137 East Hanover street, Trenton, N. J., and the agent in charge is J. Irving Davidson.

Firestone Disposes of Newark Building

(Special Trenton Correspondence)

The Firestone Tire & Rubber Company has disposed of its building at Newark, N. J., but will continue to occupy the upper floors for executive offices and as a distributing station for Northern New Jersey.

Trent Will Continue to Operate

(Special Trenton Correspondence)

The plant of the Trent Rubber Company, Trenton, N. J. which was disposed of at public sale on June 22, will continue to run until the sale has been confirmed by the United States District Court. The purchaser was Counselor Edgar W. Hunt, of Trenton, representing some of the creditors, who paid $100,000 for the entire plant. The sale was conducted by Receiver John O. Bigelow, of Newark, N. J. There were but four bidders at the sale, three of them representing out of town rubber concerns when the plant passed into the hands of a receiver the liabilities were approximately $300,000 and remain at that figure.

PLANT OF THE TRENT RUBBER CO., TRENTON, N. J.

The company was incorporated two years ago under the name of the Atlas Tire & Rubber Company and later changed to the name of the Trent Rubber Company. The firm erected a plant at a cost of $320,000 to manufacture tires and tubes.

W. J. B. Stokes' Health Improves

(Special Trenton Correspondence)

William J. B. Stokes, treasurer of the Thermoid Rubber Company, and affiliated with the Home and the Joseph Stokes Rubber Companies, is able to be about his home, 219 West State street, Trenton, after having been stricken with paralysis. This is the second stroke he has suffered.

Fisk Increasing Production

Announcement was made June 24 by the Fisk Rubber Company, Chicopee Falls, Mass., that a night shift of 300 men would be added June 27. The company has increased its day force 250 or more in the last few weeks and with the new addition will have more than 2,000 working. Demand for certain sizes of tires beyond present capacity to produce is the reason given for the expansion.

L. Candee to Reopen

The announcement was made at the L. Candee & Co. plant, New Haven, Conn., June 24, that production will will be started again on July 14, in the majority of the departments and that the entire plant will be in full operation before the end of the month. Operations were suspended May 31 and a general shutdown ordered.

Manufactures of Rubber in 1920 Census

A preliminary statement of the general results of the 1920 census of manufactures, with reference to the rubber industry, has been issued by the Bureau of Census. This report consists of establishments engaged principally in the manufacture of all kinds of rubber products during the year 1919.

Reports were received from 475 establishments having a total value of products of $1,138,216,000. In 1914, there were 342 establishments with a total value of products of $300,994,000. Of the 475 establishments reported by the rubber industry in 1920, 96 were located in Ohio; 73 in New Jersey; 56 in Massachusetts; 43 in New York; 32 in Pennsylvania; 26 in Connecticut; 22 in California; 21 in Illinois; 16 in Indiana; 10 in Rhode Island; 9 each in Iowa and Wisconsin; 8 each in Missouri and Oklahoma; 7 in Michigan; 6 in Texas; 4 each in Colorado and Washington; 3 each in Georgia, Kansas, Minnesota and Nebraska; 2 each in Maryland, North Carolina, Oregon, West Virginia and Delaware; and 1 each in Louisiana, Kentucky and Maine.

The comparative statistics for 1919 and 1914 are summarized in the statement herewith. The figures for 1919 are preliminary and subject to such changes and corrections as may become necessary upon further examination of the original reports.

COMPARATIVE SUMMARY FOR THE MANUFACTURE OF RUBBER GOODS, 1919 AND 1914

	1919	1914
Number of establishments	475	342
Value of Products*	$1,138,216,000	$300,994,000
Tires:		
Pneumatic—Automobile Casings—		
Number	22,727,000	8,022,000
Value	$485,904,000	$105,679,000
Inner tubes—		
Number	39,700,000	7,908,000
Value	$199,305,000	$20,101,000
Motorcycle and bicycle—		
Casings—		
Number	3,422,000	
Value	$11,892,000	$3,728,000
Inner tubes—		
Number	1,393,000	‡$6,906,000
Value	$2,904,000	
Solid—Truck—		
Number	1,620,000	
Value	$43,917,000	‡
All other—		
Number	6,635,000	$13,736,000
Value	$9,005,000	
Boots and shoes:		
Rubber boots—		
Pairs	9,208,000	4,025,000
Value	$26,067,000	$12,648,000
Rubber shoes and overshoes—		
Pairs	66,195,000	57,212,000
Value	$64,713,000	$37,858,000
Canvas shoes with rubber soles—		
Pairs	19,896,000	
Value	$25,177,000	†
Heels (includes only those sold as such or on hand)—		
Pairs	126,572,000	
Value	$14,238,000	
Soles, including composition or fiber—		
Pairs	18,437,000	
Value	4,321,000	†
Rubberized fabrics:		
Automobile and carriage—		
Yards	14,429,000	
Value	$10,697,000	†
All other—		
Yards	17,630,000	
Value	$13,712,000	†
Belting—		
Value	$22,436,000	$7,989,000
Hose—		
Value	$26,998,000	$16,854,000
Packing—		
Value	$7,317,000	$3,508,000
Clothing—		
Value	$10,450,000	$6,799,000
Druggists' and stationers' sundries—		
Value	$13,834,000	$7,512,000
Hard rubber goods—		
Value	$34,230,000	†
All other manufacturers of rubber—		
Value	$80,720,000	§$40,133,000
Reclaimed rubber (produced and sold as such or on hand)—		
Pounds	121,795,000	†
Value	$23,716,000	$11,135,000
All other products—		
Value	$6,663,000	$10,136,000

* In addition, in 1919, products to the value of $7,574,000 were reported by establishments assigned to other classifications and in 1914 to the value of $752,503.

† Not reported in 1914.

‡ Not segregated in 1914 (number of solid tires not shown).

§ Includes scrap and old rubber (sold or on hand).

Rubber Exhibition Held in London

According to accounts received from England the Fifth International Rubber and Tropical Products Exhibition held at Agricultural Hall, London, June 4-17 was fully on a par with its predecessors. The exhibits were reported as being uniformly excellent while the various addresses were on a high plane. In addition to the foregoing, numerous ceremonies took place during the progress of the exhibition.

Among the interesting exhibits were those of Brazil, the Gold Coast, Ceylon, Federated Malay States, Portugese Colonies and the Netherlands and Netherlands East Indies. Many firms were represented and displayed rubber machinery, crude rubber, fabrics, reclaimed rubber, chemicals and compounding materials and manufactured rubber goods of all kinds. One of the interesting exhibits showed goods made by the Peachey Process. Interesting papers were read by a number of the world's foremost authorities on rubber.

Muehlstein Handling Crude Rubber

Among the firms that have recently entered the crude rubber trade as importers and dealers is H. Muehlstein & Co., the well known scrap rubber dealers of 3rd Avenue and Harlem river, New York. They have recently secured connections in the primary markets in the Far East and in London and are now in a position to fill orders for any grade and quantity of crude rubber. This department will be under the general supervision of Herman Muehlstein, assisted by W. J. McCauley

This firm is universally known in the rubber industry through their long connection with the trade. Herman Muehlstein has been in the scrap rubber business for twenty-two years, the firm of H. Muehlstein & Co. having been established in 1911. It is composed of three brothers, Herman and Julius Muehlstein in the New York office and Charles Muehlstein in charge of the Chicago office. They also maintain offices at Akron, Boston, and London.

International India Rubber Changes Name

Official announcement is made of the change of name of the International India Rubber Corporation, of South Bend, Ind., to the Odell Rubber Company. The explanation is made by the board of directors that this change is from a long name, which was hard to pronounce and remember, to a name easier to remember and which also sets forth the name of the company's principal product—the Odell cord tire.

This change was decided on at the annual meeting at which time the following officers were elected: George W. Odell, president and treasurer; Rudolph Ackerman, vice-president; R. M. Voorhees, secretary; C. W. Truxell, director; J. W. Ridge, director.

This company was founded in 1916, and their balance sheet to December 31, 1920 shows a plant investment valued at $382,595.82, inventory and current assets of $486,661.04 and total assets of $1,427,008.09. Their new office and ware-room building started about two months ago is now ready for occupancy.

National Shoe Division to Close

The shoe division of the National India Rubber Company, Bristol R. I., will probably be closed for an indefinite period on July 8, according to notices posted at the factory on June 23. While no intimation was given as to how long the shutdown would last, it was thought that resumption of operations would depend upon the amount of orders received within the next few weeks.

Announcement was made a month ago by one of the factory officials that the entire plant would probably be closed down during the summer months. In normal times some 450 operatives are employed at the plant of the National India Rubber Company.

Liquidation of Marion Tire

President C. J. Davis of the Marion Tire & Rubber o., of Marion, which was taken over by Akron and Youngstown capitalists a few months ago, says the corporation had been forced into bankruptcy by the reduced prices of raw material. "Rubber and fabric contracted for in 1920 for $720,000 can now be purchased for $150,000, leaving a difference of $570,000 to be absorbed in manufacturing costs," Mr. Davis said. "Rather than dissipate the company's assets, we deemed it wise to liquidate the business."

Woonsocket Footwear to Reopen

The Millville, Mass., plant of the Woonsocket Rubber Company, footwear division of the United States Rubber Company, will reopen July 11 after a shutdown of six months, it was announced June 27. About 400 of the 700 employes will be given work.

MacNamara & Wadbrook Dissolves

MacNamara & Wadbrook, Inc., crude rubber brokers at 136 Liberty St., New York, will dissolve. Alfred B. MacNamara and Elston E. Wadbrook, the firm members, will continue in business at the same address as individuals.

International B. F. Goodrich Corporation

The announcement of the organization of the International B. F. Goodrich Corporation marks another widening of the field of activities of the big rubber manufacturing concern which recently rounded out its fiftieth year. The B. F. Goodrich Company made its first entry into foreign markets more than twenty years ago.

The new company, which has just been incorporated under the laws of New York with a capital of $10,000,000, will represent the B. F. Goodrich Company in foreign countries. It will take over the parent company's interest in factories (with selling organizations) located in France and Japan, as well as its selling subsidiaries in Great Britain, Italy, Spain, South Africa, Straits Settlements and Porto Rico, acquiring distributors in all foreign countries. It will handle all the products of the parent company—tires for automobiles, trucks, motorcycles and bicycles; rubber footwear; conveyor and drive belts; hose and packing; water bottles and surgical rubber goods; in short, all of the numerous different products now being made by the B. F. Goodrich Company at the Akron, Ohio, factories will come within the scope of the new company which will, in addition, produce and sell products in France and Japan.

The aggressive and progressive sales methods of the parent company and its subsidiaries have established a great volume of foreign business and its steady and rapid increase has made necessary an organization like the International B. F. Goodrich Corporation, through which will be effected centralization of all these foreign activities. With the new company as the selling representative of the parent company, as well as producing in France and Japan, the entire foreign operations will be directed from Akron.

The directors of the new company are B. G. Work, W. O. Rutherford, H. K. Raymond, L. D. Brown, H. Hough, W. C. Arthur, C. B. Raymond, F. C. Van Cleef and W. C. Geer, of whom the first six named constitute the executive committee. The officers are B. G. Work, president; W. C. Arthur, vice-president; F. C. Van Cleef, secretary; L. D. Brown, treasurer; H. Hough, comptroller; F. E. Titus, director of sales and W. H. Allen, director of manufactures.

The actual operation of the affairs of the new company will be directed by W. C. Arthur, vice-president, formerly assistant secretary of the B. F. Goodrich Company, with whom will be directly associated F. E. Titus, formerly foreign sales manager of the B. F. Goodrich Rubber Company, who will have general direction of sales, and W. H. Allen, formerly assistant-superintendent and technical director of the B. F. Goodrich Company, who will have general direction of manufacturing activities of the subsidiaries of the new company.

The New York offices of the new company will be located at 1780 Broadway while the administrative and operating offices will be located at Akron, Ohio.

Peterson Representing Foreign Firms

Among the newer members of the crude trade in New York is Fred B. Peterson of 7 Water Street, the American representative of the Wilson-Holgate interests of London, Brazil and the Far East.

Mr. Peterson is known to almost everyone in the rubber industry by reason of the important position he held as Director of the Bureau of Imports of the War Trade Board at Washington during the war. In December, 1917, this bureau

FRED B. PETERSON

took over the work of controlling the importation and distribution of crude rubber in the United States, which before that time by reason of the British rubber embargo had been under the supervision of the British Government acting through the British Consul at New York and the Commercial Advisor of the British Embassy at Washington, the late Sir Richard Crawford.

The ability and tact displayed by Mr. Peterson while directing this difficult work gained for him many friends in the rubber trade. When the war was over he decided to enter the crude rubber business, and in order to familiarize himself with all phases of the trade, he spent several months in the Mincing Lane crude rubber market in London, and then visited the primary markets in the Far East including the Federated Malay States, Straits Settlements, Ceylon and the Dutch East Indies.

He now represents the following houses: Wilson, Holgate & Co. Ltd. London; Wilson, Holgate & Co. (Far East) Ltd. Singapore; Wilson, Holgate & Co. (Ceylon) Ltd. Colombo; Wilson, Holgate & Co. (Brazil) Limitada. Para.

Associated with him is C. G. Hill who represented the Bureau of Imports, through the Rubber Association of America, on the Pacific Coast during the war, with headquarters in Seattle. After the war he went with the Chas. T. Wilson Co. and spent a year in the New York market, after which he was transferred to Akron, and later to the Boston office.

Fitch Heads Diamond Sales

Recent announcement has been made of the appointment of E. H. Fitch to the position of director of sales of the Diamond Rubber Company, Inc., Akron Ohio. Mr. Fitch is widely known in the rubber industry, having been connected with the Goodrich-Diamond organizations in managerial capacity for more than seventeen years.

In 1919 Mr. Fitch was promoted to Akron in charge of manufacturers' sales and government specifications for the B. F. Goodrich Rubber Company and his recent advancement as director of sales for all Diamond products is a logical move for one of his wide experience.

Mullin in Crude Rubber Business

Stephen M. Mullin has recently entered the crude rubber brokerage business at 35 Nassau St., New York, under the firm name of S. M. Mullin & Co. Mr. Mullin has had over fifteen years of experience in the business and is thoroughly familiar with its details. At one time he was New York agent for a large firm of Amsterdam, Holland, and later was with Hammesfahr & Co., crude rubber brokers.

Swindler Operated in New York

A swindler representing himself to be Osman Shaw, of Francis Shaw & Co., Ltd., the well known rubber machinery firm of Manchester, England, has been operating in New York and is now understood to be in the west. Members of the rubber trade are warned to be on their guard against him.

His method here was to telephone the office of some member of the trade and and request an appointment at some prominent hotel. If the meeting was granted, a hard luck story, with the request for a substantial loan followed. It is understood that he obtained several sums in this way.

Amedee Spadone, assistant secretary of the Gutta Percha & Rubber Mfg. Co., 126 Duane street, who was approached knew Mr. Shaw was in England, confirmed this by cable and ignored the imposter.

Appleby Now with Firestone

The Firestone Tire & Rubber Company has announced the addition of J. H. Appleby, well known tire and rubber expert, to their force of special motorcycle tire representatives.

Goodyear Appoints Griffin

Announcement has been made by the Goodyear Tire & Rubber Co., Akron, Ohio, of the appointment of F. R. Griffin to the position of assistant manager of domestic advertising.

Scrap Rubber Plant Burns

(Special Trenton Correspondence)

The scrap rubber plant of Samuel Kravitz, New and Union streets, Trenton, N. J., was recently destroyed by fire, causing a loss of about $30,000. The entire three story brick building was destroyed together with all the stock. Spontaneous combustion is the cause advanced for the blaze.

News of the Rubber Association

Twentieth Annual Summer Outing at Absecon, N. J., July 21—Rates on Crude Rubber from Pacific Coast Ports Reduced—News of Tire and Rim Association

Twentieth Annual Outing

The following announcement relating to the twentieth summer outing of the Rubber Association of America, which will be held at the Seaview Golf Club, Absecon, N. J., Thursday, July 21, have been sent out.

Final arrangements have been made with the Pennsylvania Railroad for the "Rubber Special" to leave Pennsylvania Station, Thirty-third Street, New York City, at 7:10 A. M. (Standard Eastern Time), 8:10 (Daylight Saving Time), arriving at Absecon as 9:53 A. M. (S. E. T.), 10:53 (D. S. T.) No day coaches carried.

The train will stop at Manhatten Transfer 7:21 A. M. (S. E. T.), at Newark 7:32 A. M. (S. E. T.) and Trenton 8:20 A. M. (S. E. T. for the convenience of the New Jersey members. A dining car will be attached and breakfast served table d'hote—$1.25 per person. Round-trip fare between New York and Absecon is $9.07; parlor car seat, $2.44, including war tax, total $11.51. Same fare applies between Manhattan Transfer, Newark, and Absecon. Round-trip fare between Trenton and Absecon is $6.27; parlor car seat, $1.70 including war tax, total $7.07.

Reservations on the train can be made only through the Rubber Association office. The association will issue identification cards bearing the member's or guest's name, as the case may be, and the car and seat number to which he has been assigned; this will afford him access to the train and regular tickets will be issued thereon. The cost of the railroad fares and the parlor car seat will be shown in the statement rendered to each member subsequent to the outing.

The cost of the outing ticket (ten dollars), does not include transportation on the "Rubber Special."

Automobile busses will convey members and their guests to and from the Absecon railroad station and the Seaview Golf Club.

Reservations for rooms at the Seaview Golf Club during the night preceding or the day and night of the outing, should be arranged through the Rubber Association office.

A golf tournament will be held on the links of the Seaview Golf Club. A putting contest, tennis tournament, trap shooting, swimming (in the club house pool) baseball, billiards, pool and bowling will be among the attractions in the field of sports.

Luncheon and dinner will be provided at appropriate hours at the club.

Excise Tax Regulations Respecting Credits

The Tax Committee of the Association is giving its attention to a recent ruling of the Internal Revenue Department that claims for credit against excise taxes paid on tires must be accompanied by a supporting statement showing

(1) Date of original sale
(2) Date of tax payment
(3) Date of return

or other basis for claiming credit.

It is assumed that this applies to returned goods, adjustments and similar transactions upon which claims for credit are commonly based.

The Tax Committee, appreciating the overwhelming amount of clerical work which would be entailed in preparing this data, contemplates conferring with representatives of the Internal Revenue Department concerning the matter.

Rates on Crude Rubber from Pacific Coast Ports Reduced

We are informed that the trans-continental railroads have arranged to establish rates on crude rubber in carloads effective June 28th from Pacific Coast ports of import to all points east thereof, to and including Chicago and St. Louis, and Minnesota and Wisconsin points, of 75c per one hundred pounds, minimum carload weight 80,000 pounds. The former rate was $1.00 per one hundred pounds, minimum carload weight 30,000 pounds.

It is expected that at a later date this reduced rate will be published to apply to Indiana and Ohio points; details will be transmitted at a later date.

Rim Inspection Report—May, 1921

During the month of May, 1921, the Tire and Rim Association inspected and approved 1,022,866 rims for pneumatic tires in the various rim plants of the United States and Canada. This number is divided in the following sizes:

30 x 3	34,387
30 x 3½	665,166
32 x 3½	55,838
32 x 4	133,985
33 x 4	63,812
34 x 4	4,840
32 x 4½	30,833
34 x 4½	28,821
36 x 4½	76
34 x 5	4,568
36 x 6	302
38 x 7	238
	1,022,866

In "The Rubber Industry" of June 15th figures covering rim inspection during the months of January, February, March and April, 1921, were shown, which provides an interesting comparison with the month of May.

Standardization of Solids for Tractors

The question of the standardization of solid tires for use on tractor wheels which is being investigated by the Tire and Rim Association is still in its early stages, and as tractor manufacturers seem to welcome this work it is thought that definite conclusions will be reached within a short time.

Accessibility of Valves from Outside of Wheels

The Tire and Rim Association has been very active in endeavoring to induce the disc wheel manufacturers to design their wheels in such a manner that tire valves will be accessible from the outside of the wheel.

It is thought that, because of the necessity in connection with most types of disc wheels to inflate tires from the inside, under-inflation has resulted with the consequent detriment to tires and unsatisfactory service to the user.

The Tire and Rim Association is of the opinion that a decided improvement in that respect will be forthcoming as a result of their endeavors.

Tire and Rim Association Semi-Annual Meeting

The regular semi-annual meeting of the Tire and Rim Association will be held at its headquarters in the Leader News Building, Cleveland, Ohio, on Wednesday, July 27, 1921.

Receiver for Republic Rubber

Judge Westenhaver in the Federal District Court, Cleveland, Ohio, on June 22, appointed C. N. Booth receiver of the Republic Rubber Corporation, of Youngstown, Ohio. This company was incorporated several years ago to take over the stock of the Republic Rubber Co. of Youngstown and the Knight Tire & Rubber Co. of Canton. Mr. Booth is vice-president of both companies.

New York interests filed the application against the Republic Rubber Co., alleging that it has contracts for cotton fabric and rubber made at high prices during the war and has not been able to either use it profitably nor sell it. Vendors of materials are insisting on carrying out their contracts.

Arthur L. Irish, of New York, who claims to own a large part of the stock of the Republic Rubber Co., for the same reason asked the appointment of a receiver. Past due obligations are said to be $400,000.

It is reported that the bank obligations of the company amount to $2,500,000. The book value shows the plant worth $4,800,000 and inventory is valued at $3,500,000.

Following the receivership for the corporation, it was announced at Youngstown that operations would continue for the present at about twenty-five per cent capacity.

Assets of Washington Tire Sold

The assets of the Washington Tire & Rubber Company, Spokane, Wash., were sold at sheriff's sale on June 18 to satisfy a judgment given the Lincoln Trust Company on a $65,000 bond issue, executed a year ago.

The property was bid in at the sale by John B. White, president of the company, for the amount of the judgment. It is reported that Mr. White acted for some of the stockholders of the company.

MARKETS

Manufactured Rubber Goods

New York, July 5, 1921

The outstanding developments of the past two weeks in the rubber industry have been the improvement of sales in some branches of the trade such as tires, owing to the reductions in prices, effected on May 2 and thereafter. Despite gloomy predictions for this season, the public has been buying quite liberally in comparison to its previous backwardness.

Another interesting development has been the decline of the crude rubber market to new record lows, in line with conditions of supply and demand throughout the world. The abnormally low price of rubber, and the cheapness of other raw materials used by the rubber manufacturers has induced many of them to reconsider their programs of curtailed output this year, since production costs are very likely to be considerably higher later on.

An instance of this is the report that the United States Rubber Company has been buying large supplies of crude rubber in the domestic market, enough, it is said to fill its needs for the current year. With standard grades of rubber procurable at 12 cents or slightly under that figure per pound in the local spot market, it would not be at all surprising if those of the large manufacturers who have been out of the market for a long time should step in and buy.

Although the present month is the dull period for most manufacturers of rubber footwear, druggists' sundries, mechanicals, tires and other rubber products, progress has been made toward the better financing of some of the companies, and there is less pessimism in evidence. There has been some splendid tire weather recently, and its continuance for the next three or four months would go a long way toward clearing the shelves of their surplus stocks.

TIRES

The situation has undergone a slight change for the better. Several weeks ago, it looked as if the Spring boom which was counted on had failed to materialize, and there was much pessimism in evidence. At the present time, it looks as if the merchandising of automobile tires has maintained itself at a very satisfactory gait.

The best indication of this, is that several manufactures who had resolved upon a program of very conservative production, involving shutdowns for several weeks at a time this summer, have suddenly taken courage from the favorable buying, and have decided to rescind their curtailment plans, and go ahead again on an increased scale of operations.

The turn for the better came close on the heels of announcements that Akron tire plants were facing a slack period. The sales department of the Goodyear company reported that sales to dealers during the second week in June were the largest for any week since the 1920 slump started. With orders coming, an increased pace was thought advisable to maintain something near normal production. It seems as if there is the normal amount of gasoline consumption by the motor-car public at this time of the year, and consequently the characteristic amount of tire replacements. Both the Mason and Fisk plants reported substantial increases in their producing force during the past month, and officials of the Goodrich Company stated that sales in June were 150 per cent better than those in earlier months of the year.

MECHANICAL RUBBER GOODS

Although mechanicals are undergoing one of the dullest seasons which it has ever been their misfortune to experience, recent developments with respect to the railroads point to a renewal of the demand for belting, packing and pneumatic brake-hose from that large source of consumption.

As stated, in an article which appeared in the June 10th. issue of the Rubber Age ,the majority of the roads have had their repair shops closed for the past five months, and have cut to the bone all purchases of equipment needed either for the repair or construction of cars. The railroads, it was pointed out, were holding repair work in abeyance until July when, with a new labor agreement, it was expected that a more economical program would be possible. Since then, the decision of United States Railway Labor Board has failed to reach any agreement on major points with the railway heads to culminate negotations with the employes as soon as possible, but except in a few instances this has not been the case. Consequently, July 1 has arrived without anything approaching a permanent settlement.

In the meantime, it has been pointed out by railway officials that any net earnings which the railroads have reported have been made at the expense of postponed work on bad-order cars. The carriers are now faced with the necessity of immediate repairs on 310,000 freight cars. They will have to go ahead with their repairs in the very near future, with the assurance to their employes that any change which the board may make will be retroactive to July 1.

Since the railways account for a considerable percentage of mechanical goods manufacturers' business, the renewal of repair work means a visible improvement in orders for supplies during the third quarter of the year. The summer months may see the mechanical trade undergoing its busiest period.

In other directions, trade has been markedly dull. Garden hose has been an active factor, but the seasonal demand has practically been covered by now, while factories using rubber equipment such as steam packing and belting are buying to meet only their immediate needs. Prices of both belting and packing were reduced by from 10 to 20 per cent on June 1, as announced in a previous issue of the Rubber Age. Competition had been so keen, that manufacturers claimed the new price-scale to have dropped to a level where any reasonable profit was out of the question. The largest item of expense, manufacturers state is labor, which has undergone only a moderate readjustment. The cost of rubber and other raw materials have been negligeable factors.

DRUGGISTS' SUNDRIES

There has been very little manufacturing activity in the druggists' sundries line during the past two months, but an active sales campaign for the Fall business is being pushed just now. As usual this year, jobbers are purchasing in a very hand-to-mouth fashion, and while this has been a fairly normal year, nothing in the way of any notable volume of transactions is looked for during the balance of 1921. The present period is the slow season because consumption of hot water bottles becomes slack. Certain of the hard rubber specialities, are, however going very well. The seasonal call for bathing caps, a pure gum proposition is also aiding in the absorption of the surplus stocks of rubber.

RUBBER CLOTHING

Many plants manufacturing raincoat fabrics and rubberized clothing have been shut down for several weeks, but are expected to re-open within a few weeks, in order to work on the Fall contracts which have been accumulating. The buying public has not been supporting this industry very well this year, and distributors have kept their orders down to a bare minimum in calculating their needs over the balance of the year, preferring rather to take chances on being caught short-handed than having capital tied up in excess inventory. Meanwhile there is pressure for lower prices exerted on the part of dealers and retailers.

Other specialities, such as rubber balls, golf-balls, and toy balloons are enjoying a good seasonal demand, although they have passed out of the hands of manufacturers by this time, with the exception of the toy balloon business which has exceeded expectations this season. Instead of anticipating the requirements of the consuming public, over the summer, the available production fell considerably under the demand which developed at the last moment.

RUBBER FOOTWEAR

Reports from Akron rubber companies manufacturing footwear state that the season just closed was satisfactory, and indications are that with a normal Fall demand, the bookings at the first of the next year will be 100 per cent normal. Accurate figures for comparison are not available but some department managers state that business has been much better than was anticipated. Stocks on dealers' shelves and in jobbers' warehouses are universally reported by Akron salesmen to be comparatively low, and it is believed that purchases will become highly necessary for the autumn business. Jobbers have held off in anticipation of the manufacturers reducing their prices further, but as this has not been the case, they have merely seen their stocks dwindle and have made little provisions for the future. Their assumption has been that when the time came there would be no dearth of supplies in the market.

One of the interesting developments in the footwear line was the report that the Firestone Tire & Rubber Company would begin to manufacture rubber heels under the trade name of Non-Skid. Another was the offer of the U. S. Rubber Company to take over the Beacon Falls Rubber Shoe Company, of Beacon Falls, Conn. for a period of five years.

Cottons, Yarns and Fabrics

NEW YORK, JULY 5, 1921

The past two weeks have seen the American raw cotton market touch the lowest point reached since September 1915. On June 21, July contracts sold off to 10.50, while October was down to 11.25, with January slightly below 12 cents. The decline was given impetus by much nervousness over British labor affairs, which resulted in a heavy selling movement. At this moment the cotton market as a whole has dropped almost 3 cents per pound below the high levels touched on the bullish crop reports of May.

In the closing week's trading of June, the decline seemed to run its course, after drastic liquidation accompanied by heavy selling orders for account of large Western and Wall Street operators. July rallied to 11.75, October to 12.00 and January to something close to 13.00. At the present writing there is a stronger tone to the market, owing to the decision of the British coal miners to return to work, which decision has undoubtedly hastened whatever price-recovery has come about.

The significant fact is, that in spite of all efforts by factors interested in higher prices, cotton has dropped one cent a pound below the 1913-1914 average of 11 cents to 14 cents for spots New York. The upward trend of the last few days may result in a permanent betterment, and then again it may just be a flurry. At any rate the settlement of the British coal strike has failed to produce the bullish enthusiasm that was expected.

This has been largely due to the fact that crop condition reports have been dominantly favorable. Furthermore the visible supply in this country still bulks as large as ever. The total indicated supply of cotton in all hands in the United States, according to authoritative records, on May 31, was 8,301,688 bales, compared with an average of about 5,000,000 bales on corresponding dates of the four previous years.

Reports from cotton manufacturing centers in England and on the Continent continue to be unfavorable. Foreign manufacturers are still curtailing heavily. Exports of cloth and yarn by Great Britain touched a new low point during May, 1921, the quantity of cloth shipped abroad totalling only 145,604,000 yards, compared with a monthly average during 1920 of 370,000,000 yards. Exports of yarn also showed a serious decline.

As to operations in the New York market from day to day, the belief prevailed that there was a large short interest which has not yet covered itself, and is expected to very shortly, before the next official crop report.

PREMIUM STAPLE COTTON

There has been so little inquiry for extra staple cotton during the period under review that it is difficult to get an accurate idea of the course of prices. In one or two quarters there was reported to be some slight interest in very high grade extra long stapled cotton, such as good middling, inch and five-sixteenth to three-eights, and it is possible to get as high as 33 cents per pound for this kind of cotton. There were two or three inquiries reported in the New England region for inch and one-quarter cotton in white middling, and the quotations were said to be very low, about 21 cents.

There has been, however, a perceptible weakening noted in prices, and on firm bids it has been possible to buy extra staple lengths in middling and even in strict middling at from 1 to 1½ cents lower than previously. But the very long lengths and the very good middling lots, have been somewhat firmer, and in one or two instances cotton merchants have added a cent to their quotation.

Interest in Sea Islands has apparently died out for the present, although average extra choice is now offered at 40 cents, which is several cents off quotations for the previous weeks. There has been some high grade Meade cotton, which would be suitable for use with Sea Island, offered in the market at slightly under 40 cents, but this too has attracted little attention.

Although prices are largely nominal and depend on the specific sale in question, the following quotations give an approximate idea of the long staple market: inch and an eighth, 17½ to 19 cents; inch and three-sixteenths, 21 to 23 cents; inch and a quarter, 24 to 25 cents; inch and five sixteenths, 26 to 28 cents.

EGYPTIAN COTTON

Only sporadic and occasional interest has been noted in Egyptian Sakels. Although the political situation in the primary market at Alexandria has been rather chaotic, prices have shown a firmer tendency. Quotations received recently were 26½ cents for July contracts on fully good fair Sakels, c.i.f. Boston, and for Uppers, 16 cents spot, exclusive of tariff.

Sales of limited quantities of medium grades said to be suitable for tire yarn work were said to have been made in the New England region around 25 cents including the tariff. The cotton was for shipment from Alexandria, but spots are offered in about the same grades at 26 and 27 cents without being taken. In New York, one merchant quoted 25¼ cents for fully good fair, Sak, c.i.f. Boston, and 18 cents for fully good fair Uppers. Buyer claimed that 22¼ cents were possible for the Sakels.

The Alexandria market has been about 3 cents stronger on Sakels, according to the last advices we have received. This has been due to the smaller arrivals of cotton from the interior. But fundamental conditions are practically unchanged with spinners in Lanacashire out of the market on account of the coal strike and no support given by American consumers. A private cable despatch from Liverpool to one of the cotton houses here stated that the stock of Egyptians in the hands of spinners there was very low, and that they were expected to come into the market very shortly. Otherwise the market in Egyptians is a stagnant affair, with but little likelihood of the mills needing much stuff for the next five months, when the supplies they now have on hand will have been depleted.

ARIZONA EGYPTIAN COTTON

The Arizona Egyptians have been in extremely bad shape, and some very low offerings have been heard of. One quoted Nos. 2 and 3 combined at 31 to 31½ cents for spot delivery. While for No. 1 Pima grades, 33 and 34 cents has been asked. Practically no real transactions have been heard of recently, and one large cotton merchant said that he had not had an inquiry for the last six weeks. There still seems to be a surfeit of supplies in this country, and the pressure of Egyptian cottons in the hands of weak sellers also serves to undermine the situation.

ALEXANDRIA

STATISTICS FOR THE WEEK ENDING JUNE 2, 1921

	ARRIVALS Cantars	EXPORTS England	(Bales) Con'nt	America	TOTAL EXPORTS Cantars	STOCK Cantars
This week	25,846	2,286	3,566	750	50,502	1,994,712
Same week 1920	1,716	642	414	2,017	23,275	788,693
" " 1919	16,617	..	..	..	..	2,607,160
Since Sept. 1, 1920	4,296,267	178,741	130,102	44,281	2,699,757	..
Same time 1919	5,547,897	323,573	120,474	244,458	5,202,204	..
" " 1918	4,712,149	285,842	102,157	48,266	3,211,789	..

TIRE FABRICS

There has been no material change in the tire fabric situation during the past fortnight. Some of the smaller manufacturers are sending in orders, but the larger ones continue to be entirely out of the market. The recent improvement in rubber manufacturing circles has resulted in a better feeling, and a steady capacity production is expected to do much toward relieving the situation.

Prices of tire fabrics did not move downward, but it was reported that three fabric mills which are in the hands of banks are underselling the market, and shading quotations on Egyptian combed and carded Peelers by a few cents. The largest factors in the market have not changed their position with regard to prices and are still asking 70 cents for the 17¼ ounce Egyptian combed.

The cord fabrics are down to a lower price scale, combed Sak being quoted at 76 cents per pound, carded Sak at 63 cents, combed peeler at 71 cents and carded peelers at 56 cents.

Prices are still more or less nominal, as enforced liquidation has thrown large offerings on the market. This condition, however, cannot last and with tire operatives working at a better rate than at any time this year, the technical position of the market will be constantly improving.

As to the tire yarn trade, itself, transactions are still very sparse, and activity is still chiefly confined to resumption of deliveries on old contracts. One or two orders for fabric have been placed recently but they have not been in the usual volume and little prospect for improvement seems to be indicated.

HOSE AND BELTING DUCKS

The market has been rather quiet with greater activity among rubber manufacturers reflected in more frequent orders against stocks held under old contract. Most mills do not expect rubber companies to order any new material during the balance of the year, and anticipate rather keeping busy on old contracts. Both belting and hose ducks have been firm at 25 cents per pound. Enameling ducks also remained unchanged at a range of from 25 to 28 cents. Other ducks were not so firm. Shoe was featureless, while both single filling and double filling ducks were perceptibly weaker and the latter dropped a cent in the course of actual trading in the past two or three weeks selling down to a basis of 13 to 14 cents.

DRILLS, SHEETINGS AND OSNABURGS

Sheetings have slackened up a bit after a fairly active session. Market has been comparatively firm, there having been only a few fractional declines in prices over the past month. Very few factors are willing to go lower as a matter of policy, although it is still possible to secure odd lots at concessions from established quotations. The 40-inch 2.50-yard sheetings were ¼ cent lower, and the 3.15-yard showed a similar change; otherwise the market was quite stable. The osnaburgs were featureless and few sales of any importance were noted.

Drills have been distinctly weak for a long time and have shown no tendency to learn better ways. Among the 37-inch varieties, the 2.75 yard, the 3.00-yard and the 3.95-yard dropped from ¼ to ½ cent per yard. Burlaps were firm on stronger advices from Calcutta, and slightly improved buying in the domestic market.

TIRE FABRICS

17¼-ounce Sea Island combed sq. yd. ..... Nominal

17¼-ounce Egyptian, combed	.70	@	.75
17¼-ounce Egyptian, carded	.57	@	.60
17¼-ounce Peelers, carded	.50	@	.55
17¼-ounce Peelers, combed	.65	@	.67

CORD FABRICS

Combed Sak ..... lb.	.76	@	—
Carded Sak ..... lb.	.63	@	—
Combed Peeler ..... lb.	.71	@	—
Carded Peeler ..... lb.	.56	@	—
Carded Arizona ..... lb.	.70	@	—
Combed Egyptian ..... lb.	.76	@	—
Carded Egypt (uppers) .... lb.	.63	@	—
Chafing fabrics ..... lb.	.50	@	—

DUCKS

Belting (pound basis) ..... lb.	.25	@	—
Hose (pound basis) ..... lb.	.25	@	.26
*Enameling ..... lb.	.25	@	.28
Shoe Ducks ..... lb.	.30	@	—
Single filling ..... yd.	.10	@	.13½
Double filling ..... yd.	.13	@	.14

*Price varies according to width.

DRILLS

37-inch 3.25-yard ..... yd.	.06¾	@	.07¼
37-inch 2.75-yard ..... yd.	.08	@	.08¼
37-inch 3.00-yard ..... yd.	.07¼	@	.07½
37-inch 3.50-yard ..... yd.	.06½	@	.06¾
37-inch 3.95-yard ..... yd.	.05¾	@	.06

OSNABURGS

30-inch 7-ounce	.06¾	@	.07
40-inch 7-ounce	.07	@	.07½

SHEETINGS

40-inch 2.35-yard ..... yd.	.10	@	—
40-inch 2.50-yard ..... yd.	.09	@	—
40-inch 2.85-yard ..... yd.	.08	@	.08¼
40-inch 3.15-yard ..... yd.	.08¾	@	.09¼
40-inch 3.60-yard ..... yd.	.07¾	@	.08
40-inch 3.75-yard ..... yd.	.06½	@	.06⅝
40-inch 4.25-yard ..... yd.	.05½	@	.06

Note—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS
(Carload Lots)

7 -ounce 40-inch ..... lb.	3.40	@	——
7½-ounce 40-inch	3.40	@	——
7½-ounce 45-inch	4.25	@	——
8 -ounce 40-inch	3.50	@	——
8½-ounce 40-inch	3.75	@	——
10 -ounce 36-inch	4.00	@	——
10 -ounce 40-inch	4.10	@	——
10 -ounce 45-inch	5.00	@	——
10½-ounce 40-inch	4.15	@	——

Chemicals and Compounding Materials

NEW YORK, JULY 5, 1921

Sellers of chemicals, fillers and ingredients used by the rubber trade have reported a slight improvement in buying conditions over those prevailing two weeks ago. By about the second week of June the manufacturers who had been in the market seemed to lose interest in either spot or future transactions, and for a week or two the various items in the list of chemicals were dormant.

Latterly, however, there has been a more active inquiry, and in the case of some of the heavy chemicals, in which the large consumers have been tied up to contracts they have been sending in delivery orders again.

Events of the past month seem to indicate that the market has at least reached a fairly stable basis, as price-changes have been comparatively few and far between. Here and there some commodity has weakened and dropped to even lower price levels, as in the case of solvent naptha, napthalene flakes, glycerine, aluminum silicate, and one or two other items. On the other hand there have been cases where prices have hardened, and even made substantial gains over the rock bottom levels reached this season. Caustic soda, soda ash, and benzol are cases in point.

The present season is the dull stretch of the year, and as most large consumers who are to do any manufacturing at all have practically filled their wants for the next few months, it is hardly likely that there will be any further sustained declines, while material gains are very much in order as stocks become exhausted. At any rate trading during the summer months will probably be limited to last-moment purchases for immediate requirements, for the most part.

BARIUM PRODUCTS

Blanc fixe has been very quiet at 4¼ to 4½ cents per pound in large quantities. There is a very slight production going on at the present time. But it is quite unlikely that production will be resumed on anything approaching the former scale, as the surplus is still very large. Business in Western prime white barytes has also slackened up after making a fair recovery during the month of May. Quotations from point of production hold unchanged at $24.50 to $26.50 per ton but in the spot market prices range between $40 and $44 per ton, with package, transportation and other charges included. The Southern off-color barytes have been absolutely out of the market as far as any buying activity is concerned.

COLORS

Indian reds and other pure oxide reds hold strongly to established prices. The possibility of higher quotations has been obviated, by the settlement of the British coal strike, which had held up the production of fresh supplies for many weeks. Shipments have been light, and the chances of bettering the open market rates through odd lots or stocks in the hands of brokers are slight.

Producers of carbon gas black state that there is further legislation pending in some of the producing states, which may affect the visible supply. Meanwhile the price holds firmly to the 10½ to 20 cents range, with the threatened legislation revealing a hardening effect on the market. It was reported that the demand which dropped off for a time two or three weeks ago, is suddenly re-asserting itself again. For the present, little fear is felt as to the supply being sufficient to fill current wants, but conditions are far better than they were earlier in the year. Tire operatives are no longer unloading excess stocks on a collapsing market, as they did in February and March. Other varieties of black have been unchanged and dull, lampblack being especially stagnant at the present time.

Chrome yellow has held to the low price of 21 cents reached about two months ago. The paint trade has bought considerable amounts and some lots have been going into rubber chemicals, but trade has finally narrowed down to small proportions. Iron blues have not been able to recover from the low of 55 cents to which they dropped recently, even though producers assert that it is practically a loss to turn it out at current values.

There has been a fair demand for crimson and golden antimony sulphuret at previous prices. Small lots have been passing freely into the hand of consumers in the last week or so, and prices have been stable.

LEAD PIGMENTS

Both sublimed white lead and basic carbonate white lead have been considerably helped by the spring business in these lead products. Of late the rubber companies have been making more frequent orders against material held in store for them. But it is the same old story of long term contracts on stocks which will cover the needs of the larger factors for practically the balance of the year. Litharge has been in good demand, after having quieted down for a time.The outlook is rather dull for lead pigments during the summer months, except for buying by the paint trade. Although the large corroders are quoting 8 cents per pound on white lead, basic carbonate, in certain quarters it is possible to secure the material at 7½ cents per pound, in car load lots, a considerable concession.

LITHOPONE

Producers of lithopone have done an excellent business for the past three months, better probably than any other pigment base this year. But by this time, orders have largely run their course, and a gradual slackening will probably take place. Up to mid-June plants were engaged at full capacity, but since then there has been a slight let-down which however has not affected the price in any way, quotations remaining firm at 7 cents per pound in bags and 7¼ in barrels.

TALCS AND CLAYS

A shipment of 100,000 pounds of talc arrived from Italy about two weeks ago, and it was doubtless the expectation of this and other shipments that sent the market down from about $57 per ton earlier in May to $45 per ton at the present time. About 500 tons of china clay also arrived at the same time, and served to further embarass the overstocked dealers in this commodity.

WHITING

There seems to be plenty of the domestic whiting being passed into rubber makers' hands at $13 and $14 per ton, whereas the English chalk whitings selling at around $1.15 per cwt. or $22 per ton are enjoying much more limited sales. The tire manufacturers are not interested in these grades, but rubber specialities manufacturers are taking fair quantities of the high grade whitings, such as English cliffstone at $1.75 per cwt.

ZINC OXIDE

Business continues on a far better basis than was the case several months ago, but for many weeks to come, it will be a question of how fast the large tire manufacturers can consume the stocks which they have made commitments for and which are to be delivered at their orders from time to time. Considerable headway toward cleaning up the surplus has been made in the past two months, and prices are therefore steady with no indication of any downward tendency.

CRUDES

There was an active interest displayed in spot benzol at 27 cents for the pure and 25 cents for the 90 per cent. The technical position of the market was strong, as supplies for prompt shipment cannot be said to be ample, and other items reflected the strength of benzol, and in sympathy with it resisted pressure for lower prices successfully. Xylol was firm at 28 cents for the commercial grade and 40 cents for the pure. Phenol was also steadier than the majority of the crudes, and regardless of sizable offerings recently made, this item is firmer, with surplus stocks largely cleared up. In other directions, the market was disappointing.

INDUSTRIALS

The bull movement in caustic soda has continued irresistibly for the past three weeks, and current prices have been marked up again to $4.20 to $4.25 per cwt. for the 76 per cent. Buyers have been bidding actively, but the spot market is very firm just now, and offerings of whatever stocks are available are entirely out of line. Soda ash has also been bullish and has occupied virtually the same strong position as caustic. The price has been marked up to $2.15 to $2.25 during the past week or so, and offerings have been light.

INTERMEDIATES

Consumers have been in the market for accelerator chemicals to a somewhat greater extent than was the case at the time of our last report. Sellers of aldehyde ammonia, aniline oil, hexamethylene-tetramine, and thiocarbanilid stated that a fair amount of business in these commodities has been transacted. Aniline oil was steady, and has been so for many weeks, after a slight flurry about a month ago, at 20 cents per pound. However, only small lots seem to be wanted, and the movement of such quantities does not seem to be important even in the aggregate. Consumers of formaldehyde, also continue to limit their commitments to small lots, and the market for this item still presents a quiet appearance. Dealers generally demand 13½ to 14 cents a pound, but it is believed that on large spot orders concessions could be obtained.

ACCELERATORS

Organic				
Aldehyde ammonia, crystals	lb.	$ .90	@	.95
Aniline oil, bulk basis	lb.	.20	@	.22
Excellerex	lb.	.65	@	.75
Formaldehyde-aniline	lb.	.60	@	.65
Hexamethylene-tetramine (powdered)	lb.	.90	@	.92
Paraphenylene-diamine	lb.	1.75	@	2.00
Thiocarbanlid	lb.	.50	@	—
Vulcocene	lb.	.35	@	..
Inorganic				
Lead, dry red, bbls	lb.	.08¾	@	.09¼
Litharge, commercial, bbls.	lb.	.08¼	@	.08½
Lime, hydrated	lb.	.01½	@	.02½
Magnesia, calcined, light	lb.	.25	@	.30
calcined, heavy	lb.	.06	@	.06½
Magnesite, powdered	ton	50.00	@	65.00

COLORS

Blacks				
Bone, powdered	lb.	.06½	@	.08½
Carbon gas	lb.	.10½	@	.20
Drop	lb.	.07½	@	.16
Ivory	lb.	.10½	@	.45
Lampblack	lb.	.15	@	.45
Oxide of iron	lb.	.04½	@	—
Blues				
Prussian	lb.	.55	@	.60
Ultramarine	lb.	.10	@	.35
Cobalt	lb.	.25	@	.30
Rubber maker's blue	lb.	3.50	@	..
Browns				
Iron oxide	lb.	.04	@	.08
Sienna, Italian, raw burnt	lb.	.06	@	.15
Umber, Turkey, raw and burnt	lb.	.05	@	.06½
Greens				
Chrome, light, c. p.	lb.	.36	@	.40
medium	lb.	.40	@	.52
dark	lb.	.52	@	.58
oxide	lb.	.60	@	.70
Reds				
Antimony, crimson sulfuret	lb.	.40	@	.46
red	lb.	.25	@	.28
golden	lb.	.25	@	.30
Indian, pure,	lb.	.13½	@	.16
oxide, copperas, pure	lb.	.13½	@	.15½
reduced	lb.	.11½	@	.12½
Para toner	100 lb.	1.50	@	1.70
Toluidine toner	lb.	3.25	@	3.50
Tuscan	lb.	.17½	@	.30
Venetian	lb.	.02½	@	.03½
Vermillion, English, quicksilver	lb.	.90	@	.95
domestic	lb.	.25	@	.30
Yellows				
Chrome, light, c. p.	lb.	.21	@	..
dark	lb.	.21	@	..
medium	lb.	.21	@	..
Ocher, French	lb.	.03¼	@	.04
domestic strong	lb.	.03	@	.05
Zinc chromate	lb.	.40	@	.50

COMPOUNDING INGREDIENTS

Aluminum flake, bags	ton	27.00	@	..
bbls.	ton	33.00	@	..
Aluminum silicate	ton	16.00	@	18.00
Ammonium carbonate, powdered	lb.	.07½	@	.10
Barium dust	lb.	.05	@	..
Barytes, Southern off-color, f.o.b. mills	ton	16.50	@	18.00
Western, prime white, f.o.b. mills	ton	24.50	@	26.50
Beta-naphtol, technical	lb.	.37	@	.40
Blanc fixe, dry, f.o.b. works	lb.	.04	@	.04¼
Cadmium sulphide	lb.	1.20	@	1.30
Casein, c. p.	lb.	.40	@	.42
Chalk, precipitated, extra light	lb.	.02¾	@	.03¼
heavy	lb.	.02¼	@	.02½
Clay, China, domestic, lump	ton	7.50	@	9.00
imported	ton	16.00	@	24.00
Dixie	ton	22.00	@	35.00
Blue Ridge	ton	22.00	@	35.00
Formaldehyde	lb.	.13	@	.14
Fuller's Earth, powdered	ton	22.00	@	..
Fossil flour	ton	60.00	@	..
Genasco, mineral rubber	ton	50.00	@	52.00
Gilsonite	ton	60.00	@	65.00

Glues, extra white	lb.	.30 @	.40
medium white	lb.	.25 @	.30
cabinet	lb.	.20 @	.35
cabinet low grade	lb.	.17 @	.19
common bone	lb.	.13 @	.19
Graphite flake, bbls.	lb.	.14 @	.20
powdered	lb.	.04 @	.10
Ground glass, fine	lb.	.03½ @	.04
Hydrocarbon, hard	ton	35.00 @	45.00
soft	ton	35.00 @	40.00
Infusorial earth, powdered	lb.	.02 @	.03½
bolted	lb.	.03½ @	..
Lead, sublimed white	lb.	.07¼ @	.07½
white, basic carbonate		.07½ @	.08
Liquid rubber	lb.	.16 @	..
Lithopone, bags, car lots	lb.	.07 @	..
bbls.	lb.	.07¼ @	..
M.R.X., mineral rubber	ton	80.00 @	90.00
Napthalene flakes	lb.	.07 @	.08½
Orange Mineral	lb.	.11¾ @	.13½
Plaster of Paris	bbl.	4.25 @	5.00
Rotten Stone	lb.	.02½ @	.04½
Rubber Substitute, black	lb.	.08 @	.15
white	lb.	.10 @	.17
brown	lb.	.12 @	.16
Silica (silex)	ton	12.00 @	35.00
Soapstone, powdered	ton	12.00 @	15.00
Starch, powdered corn	cwt.	2.18 @	2.56
French	ton	22.50 @	30.00
Sulphur, flour, commercial	cwt.	1.45 @	2.10
superfine	cwt.	2.00 @	2.90
Sulphur, chloride, drums, (see also Colors, Antimony)	lb.	.06 @	.07
Talc, domestic	ton	18.00 @	20.00
French	ton	22.50 @	30.00
French, high grade	ton	40.00 @	42.50
Italian	ton	45.00 @	50.00
Terra Alba, American No. 1	cwt.	1.85 @	2.00
American No. 2	cwt.	1.25 @	..
Tripoli	lb	.02½ @	..
Whiting, domestic	cwt.	.75 @	.80
Quaker	ton	13.00 @	15.00
English chalk, commercial	cwt.	1.15 @	1.20
glider's bolted	cwt.	1.20 @	1.30
Paris white	cwt.	1.40 @	1.50
English cliffstone	cwt.	1.65 @	1.75
Vorite, Rubber Substitute "Soft"	lb.	.14 @	..
"A"	lb.	.14½ @	..
"C"	lb.	.14½ @	..
"Special"	lb.	.14½ @	..
Zinc Oxide— French process, red seal	lb.	.10 @	.10½
white seal	lb.	.12¼ @	.12½
green seal	lb.	.11 @	.11½
Leaded grades, American process— Commercially lead free	lb.	.08¾ @	.09¾
5 per cent lead sulphate	lb.	.08 @	.08½
10 per cent lead sulphate	lb.	.07⅞ @	.08⅜
20 per cent lead sulphate	lb.	.07¾ @	.08¼
35 per cent lead sulphate	lb.	.07⅝ @	.08⅛

SOFTENERS

Oils			
Castor, No. 3 bbls.	lb.	.08¾ @	—
Corn, crude, bbls.	lb.	.07 @	—
refined	lb.	.09 @	—
Chinawood, bbls	lb.	.13½ @	.14½
Cottonseed, crude	lb.	.05½ @	—
prime summer yellow	lb.	.07 @	—
Glycerine, c. p. drums	lb.	.15½ @	.16
Linseed, carload spot	gal.	.70 @	—
bbls.	gal.	.73 @	—
Palm, Niger	gal.	.05½ @	—
Lagos	lb.	.07 @	.07¼
Peanut, domestic crude	lb.	.06 @	.06¼
Pine, steam distilled, over .933 sp. gr.	gal.	1.30 @	1.35
Rapeseed, refined	gal.	1.10 @	—
blown	gal.	1.00 @	—
Rosin, first rectified	gal.	.35 @	—
second rectified	gal.	.37 @	—
Tar, commercial	gal.	.35 @	.37
Soya Bean, crude, bbls.	lb.	.08 @	.08½
Resins and Pitches			
Cantella gum	lb.	.50 @	..
Cumar resin	lb.	.09 @	.13
Tar, retort	bbl.	11.50 @	—
kiln burnt	bbl.	11.50 @	—
Pitch, Burgundy	lb.	.05 @	.06
coal tar	ton	22.00 @	..
rosin	bbl.	6.75 @	7.00
Rosin, grade B. ex-yard	bbl.	4.90 @	—
grade K	bbl.	6.00 @	—
Shellac, T. N.	lb.	.53 @	.57
fine orange	lb.	Nominal	
bleached, ground	lb.	.68 @	.69
bone dry	lb.	.80 @	.81
Solvents			
Acetone, drums, c.p.	lb.	.11½ @	.12
Alcohol, denatured, No. 1	gal.	.37 @	.38
Methyl, 95 per cent, drums	gal.	.75 @	.77
Ethyl, 190 proof, drums	gal.	4.65 @	4.75
Benzol, 90 per cent	lb.	.25 @	.31
pure	lb.	.27 @	.35
Carbon bisulphide,	lb.	.06½ @	.07½
tetrachloride	lb.	.10½ @	.12
Dimethylaniline	lb.	.40 @	.55
Naptha, motor gasoline, steel bbls.	gal.	.26 @	..
68 to 70 degrees	gal.	.35 @	.35½
70 to 72 degrees	gal.	.36½ @	..
73 to 76 degrees	gal.	.37½ @	.38½
machine, steel bbls.	gal.	.43½ @	.47½
solvent, crule, heavy	gal.	.24 @	—
Phenol,	lb.	.09½ @	.16
Toluol, pure, drums	gal.	.27 @	.32
Turpentine, spirits, ex-yard	gal.	.58 @	.60
wool	gal.	.56 @	—
Xyol, pure	gal.	.40 @	.43
commercial	gal.	.28 @	.33
Waxes			
Beeswax white, pure	lb.	.43 @	.47
Carnauba, No. 1	lb.	.46 @	.48
Ceresin, white	lb.	.12½ @	.13
Bayberry	lb.	.22 @	.24
Montan, crude	lb.	.06½ @	.07
Ozokerite, hard, pure	lb.	.30 @	.33
Paraffin, pale, .885 sp. gr.	lb.	.18 @	.21
Petrolatum, amber, bbls.	lb.	.05 @	.05½
dark amber	lb.	.04½ @	..
Zinc sulphate	lb.	.03¼ @	.03½
Acids			
Acetic, 28 per cent	cwt.	2.50 @	2.75
Carbolic (phenol)	lb.	.09½ @	.16
Cresylic, 97 to 99 p. c. pale	gal.	.70 @	.75
Muriatic, 20 degrees	cwt.	1.00 @	1.50
Nitric, 36 degrees	cwt.	5.50 @	6.00
Sulphuric, 66 degrees	ton	18.00 @	20.00
60 degrees, bulk	ton	11.00 @	12.00
Tartaric, crystals	lb.	.29 @	.37
Alkalies			
Caustic soda, 76 p.c.	cwt	4.20 @	4.25
Soda ash, 58 p.c.	cwt.	2.15 @	2.25

Crude Rubber

New York, July 5, 1923

On June 25th. the New York rubber market established a new low record when smoked ribbed sheets sold off to 11½ cents on spot, as a result of extreme nervousness on the part of the majority of dealers and importers. Since then the market has rallied, and at the present writing the leading grade, is quoted at a basis of 12¼ to 12½ cents in the local market, after running up as high as 13 cents for one morning. First latex crepe is quoted at 14½ cents and forward positions have gained proportionately.

The advance during the last few days of June, which seemed to have been checked by July 1st., coming after a sustained decline, was the first show of strength by rubber in many weeks. Traders in New York were inclined to ascribe it to the better reports from Akron during the latter part of June, the better showing by some of the large manufacturers such as Goodyear, after all sorts of adverse predictions, and the firming up of the London market. Another factor has been a little flurry of short covering.

At 11½ cents per pound, the moment was evidently opportune for some short covering by interests obliged to make deliveries in July. Again, rubber was so obviously cheap that some manufacturers stepped in and bought small amounts, even though they thought it quite possible for the market to drop even lower at times later on. One transaction of some 200 tons was heard of, and the market was so sensitive that a purchase agreement involving no more than $5,000 was enough to occasion an advance of 1½ cents temporarily.

Other bullish arguments were the fact that the Goodyear company was speeding up production and stated publicly that output of 25,000 tires a day would be maintained through the month of July. Another was the climb of the London market on ribbed smoked sheets of 8¾d., or approximately 14 cents at current exchange.

Against these views, the bears maintain that the situation is fundamentally unchanged, and that the recent gains have been of a purely temporary nature. The suyply situation in the primary market is unchanged, London still has some 70,000tons of rubber, and there is still an equal amount in this country.

It must be remembered that most of the tire companies in the first rank, are in no position to buy stocks of rubber, as their cimmitments are extremely heavy and run far into the future. A rather questionable rumor, published in one of the daily papers, had it that the United States Rubber Company was buying a year's supply in the domestic market at prevailing low prices, because the spot market was 50 per cent below actual producing cost. Most of the prominent dealers in New York denied this flatly, saying that if the United States Rubber Company bought anything approaching a year's supply, a very considerable tonnage, there would have been fire-works seen in the rubber market. Values would have gone up like a rocket. Manufacturers have been laying in supplies, undoubtedly, but these have been mostly the smaller concerns, and they have been merely fllling in.

Ceylons			
Smoked sheets, ribbed, spot		.12¼ @	.12½
July-Sept. sheets		.13 @	—
Oct.-Dec. sheets		.14 @	—
Smoked sheet plain, spot		.11½ @	—
First latex pale crepe		.14½ @	—
July-Sept. latex		.13¼ @	—
Oct.-Dec. latex		.14¼ @	—
Amber crepe, No. 1		.11½ @	—
Amber crepe, No. 2		.10½ @	—
Amber crepe, No. 3		.09 @	—
Clean brown crepe		.09½ @	—
Light clean brown crepe		.09½ @	—
Roll brown crepe		.09 @	—
Grand Central crepe		Nominal	
Africans			
Loando Niggers		.07 @	—
*No. 1 Benguella		.07 @	—
*No. 2 Benguella		.06½ @	—
Lapori Ball		— @	—
Paras			
Up-river fine		.15½ @	.16
Up-river medium		.13½ @	—
Up-river coarse		.07½ @	—
Islands fine		.16 @	—
Islands coarse		.07 @	—
*Madeira fine		.21 @	—
Cameta		.07½ @	—
Centrals			
Corinto prime		.06 @	—
Esmerelda prime		.06 @	—
Miscellaneous			
Guayule wet		.10 @	—
*Balata block Panama		.25 @	—
Balata sheets		.71 @	—
Palembang		.06¾ @	—
Bangermassin		.06¼ @	—
Columbian Block Balata		.26 @	—
Prime Pontianac		.06¼ @	—

*Nominal

Scrap Rubber

NEW YORK, JULY 5, 1921

Little has developed in the scrap rubber market during the past two weeks and there seems to be but little likelihood of anything of importance happening in the immediate future. Conditions are such that the scrap rubber business is practically at a standstill with manufacturers marking time while they are watching the market for crude.

As long as crude rubber remains at its present low levels just so long will there be stagnation in the scrap business. Rubber is now being sold at approximately half the cost of production and with such figures ruling the manufacturers who formerly used scrap rubber in the manufacture of their products are now buying crude for their uses.

Price cutting by scrap dealers seems to be falling off in view of the fact that reduced prices no longer seem to stimulate the prospective customer to the buying point. Jobbers in scrap still hold large stocks and find it well nigh impossible to dispose of them.

The reclaimers are coming into market every little while but are buying in a hand to mouth manner only. Present and immediate needs satisfied they once more assume their passive attitude with respect to buying. It is contended, however, that the reclaimers have little or no stock of scrap rubber on hand and this in itself will make for good business when buying is resumed.

Prices quoted nominally by leading scrap dealers in New York were as follows:

	Cents per Pound
Solid Tires	.01½ @ .02
Auto Tire Peelings	.02¼ @ .02½
Truck Tires	.01 @ .01¾
Black Rubber	.01½ @ .02
Boots and Shoes	.02¼ @ —
Arctics, trimmed	.02 @ .02¼
Arctics, untrimmed	— @ —
Tire—Automobile	½ @ ¾
Bicycles, pneumatic	½ @ ¾
Mixed Hose	½ @ ¾
Air Brake	.01 @ —
Inner Tubes, No. 1	.04¼ @ .04¾
Inner Tibes, No. 2	.03¼ @ .03½
Red Tubes	.02¼ @ .03½

Akron Stock Prices

(Special Akron Correspondence)

Recent reports of increased tire sales has been reflected in the quotations for rubber shares on the Akron stock market. Firestone common and Goodyear issues are the outstanding features. Firestone has climbed four points to 55 and Goodyear is selling at 10 after having dropped to five following the reorganization.

Following are quotations for July 6:

	Bid	Asked
Amer. R. & T. com	30	40
Amer. R. & T.	..	80
Amazon Rubber	..	20
Firestone T. & R. com	52	55
do 6 pct. pfd.	72	80
do 7 pct. pfd.	61	..
General T. & R. com	..	200
do 7 pct. pfd.	75	85
B. F. Goodrich com	29	30½
do 7 pct. pfl.	64	67
do 5 yr. 7 pct. notes	89	89½
do 7 pct. pfd.	23	23½
Goodyear 8's	98½	99
Goodyear T. & R. com	9⅝	10
Goodyear 8's	98¼	98¾
India Rubber com	65	70
do 7 pct. pfd.	70	80
Mason T. & R. com	..	11
do 7 pct. pfd.	45	50
Marathon T. & R. com	2½	3½
Miller Rubber com	45	..
do 8 pct. pfd.	55	65
Mohawk Rubber	..	88
Portage Rubber com	..	10
do 7 pct. pfd.	..	10
Republic Rubber com	..	⅝
do 7 pct. pfd.	..	7
do 8 pct. pfd.	..	4
Rubber Products	..	50
Star Rubber com	..	100
do 8 pct. pfd.	..	100
Swinehart T. & R. com	..	40
do 7 pct. pfd.	..	70
Phoenix Rub. com	..	15
do pfd.	..	90
Standard Tire com	..	100
do pfd.	..	90

New York Stock Prices

Following are the New York Stock Exchange quotations on the various rubber stocks listed for July 6:

	Bid	Asked
Ajax Rubber Co.	21¼	22
Fisk Rubber Co.	12¾	13
Kelly-Springfield	38	38¼
Keystone Tire Co.	11¾	12½
Lee Rubber & Tire	26½	27
U. S. Rubber Co.	53½	53⅝
do 1st pfd.	94½	97½

American Rubber Patents

ISSUED JUNE 7, 1921

1,380,425—To William Seward, Baltimore, Md. Mold for vulcanizing pneumatic tires.

1,380,426—To William Seward, Baltimore, Md. Process for vulcanizing pneumatic tires.

1,380,463—To George W. Bulley, Chicago, Ill. Vulcanizing apparatus.

1,380,496—To Michael E. Osborn and John R. Wollam, Midland, Pa. Automobile tire.

1,380,501—To Ryumatsu Sera, Los Angeles, Cal. Tire.

1,380,520—To Raymond H. Blanchard, Malden, Mass., assignor to Hood Rubber Co., Watertown, Mass. Hard-rubber battery jars and process for making same.

1,380,537—To Walter R. Denman, Cleveland, Ohio. Core for use in curing pneumatic tires.

1,380,625—To Marvin C. Altmayer, New York, N. Y. Tire-protector.

1,380,627—To William B. Banfield, Manitoba, Canada. Emergency-tire.

1,380,640—To Samuel Cleland Davidson, Belfast, Ireland. Manufacture of rubber.

1,380,645—To Harry E. Fisher, Mifflin township, Franklin Co., Ohio. Mold for rubber tires and tubes.

1,380,667—To Robert McClenathen, Cuyahoga Falls, Ohio, assignor to Kelly-Springfield Tire Co. Rubber-tire building machine.

1,380,736—To John H. Patten, Kent, Wash., assignor to W. T. Behne, King County, Wash. Method of making automobile tires.

1,380,765—To Clayton W. Bedford, Akron, Ohio, assignor to Goodyear Tire & Rubber Co., Akron, Ohio. Art of compounding rubber.

1,380,820—To Louis F. Martin, St. Paul, Minn. Vehicle-tire.

1,380,854—To William Vanderpool, Springfield, Ohio. Clamp for vulcanizing molds.

1,380,862—To Albert Boecler, Malmo, Sweden. Apparatus for manufacturing seamless articles of rubber.

1,380,919—To Fred Maier, Los Angeles, Cal., assignor to Western Vulcanizer Manufacturing Co., Chicago, Ill. Matrix for vulcanizers.

1,380,930—To George Emory Sapp, Sacramento, Cal. Vulcanizing air bag.

1,380,960—To Veronica Hmenia, Klein, Mont. Rubber thimble.

1,380,966—To Arge Leo Jacobson, New York, N. Y., assignor to Leo A. Kearney, New York, N. Y. Tire-vulcanizing apparatus.

1,381,060—To James Briggs, Hollings Hill, Esholt, England. Anti-skid device.

1,381,094—To Albert L. Austin, Cleveland, Ohio, assignor to the Standard Tire Protector Co., Cleveland, Ohio. Tire.

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1,381,105—To George F. Bullock, Detroit, Mich. Tire.

1,381,108—To Laurence R. Davis, Providence, R. I., assignor to Revere Rubber Company. Truck-tire.

1,381,173—To Joseph H. Dwork, Newark, N. J. Inlaid-tread tire.

1,381,185—To Herman Grimelmann, Wallisellen, Switzerland. Manufacturing of india-rubber suckers provided with valve-projectures.

1,381,242—To Fred A. Schwartz, Brooklyn, N. Y. Automatically-adjustable knives for use with rubber-working calenders.

1,381,254—To Edward J. Thorp, New York, N Y., assignor to A. G. Spalding & Bros., New York, N. Y. Supporter and protector.

1,381,316—To William G. Lerch, Akron, Ohio, assignor to India Tire & Rubber Co., Mogadore, Ohio. Apparatus for manufacturing pneumatic-tire casings.

1,381,345—To Henry C. Sankey, St. Louis, Mo. Protective covering for rubber tires.

1,381,455—To Samuel Cleland Davidson, Belfast, Ireland. Treatment of rubber latex.

1,381,602—To Ira Trautman, New York, N. Y. Automobile tire.

1,381,654—To Emil Muschewske and William W. Wood, Los Angeles, Cal. Process of reclaiming rubber.

1,381,749—To Charles P. Salgee, Philadelphia, Pa. Anti-skid tire.

1,381,815—To Robert H. Fenley, Fort Worth, Texas. Puncture-proof auto- tire.

Receiver for Katzenbach & Bullock

On application of Edward L. Bullock, of Trenton, N. J., Judge Joseph L. Bodine, in the Federal Court at Trenton, on June 28, appointed William E. Green, of the Trenton Banking Co., of Trenton, receiver for Katzenbach & Bullock, organized in 1910, to deal in pigments and other chemicals.

The receivership was voluntarily applied for by Mr. Bullock after the board of directors of the company had approved such action through a resolution. Mr. Bullock is one of the officers of the concern.

The petitioner in his bill stated that the company has outstanding liabilities of approximately $400,000, and assets of approximately $600,000. Included in the assets are $362,500 of bills receivable from debtors who have been hard hit by the depression in business, and many of whom have been forced into the hands of receivers.

National Closes Wire Division

Notices were posted at the factory of the National India Rubber Company, Bristol, June 14, stating that owing to lack of orders the wire division closed June 17 until Monday, July 18. Two hundred operatives are affected. During prosperous times 800 were employed.

One Year for California Goodyear

One year from the day the first tire was turned out at the new plant of the Goodyear Tire & Rubber Company of California, casing number 345,012 was taken from the mold and placed on exhibition by the Los Angeles Chamber of Commerce. Tube number 394,086 was sent along to keep it company.

In production, eleven months after the first ground was turned in a cabbage patch four miles from the business center of Los Angeles, the Goodyear plant—largest of its kind anywhere in the west—has been but slightly affected by economic conditions and is doing close to the $1,000,000 a month business that has poured in ever since it was established.

Ludington Back from Continent

George A. Ludington, vice-president of the Fisk Rubber Co., Chicopee Falls, Mass., arrived in New York on July 1 on the steamship *Adriatic* from a six weeks European tour.